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In This Issue

Railroad Exhibits Again a Center of Interest at World's Fair..Page 764
An article describing the transport displays which include many new features designed to appeal to visitors to the Century of Progress Exposition of 1934.

Characteristics of Diesel Engine in Rail-Car Service..... 773
Tells how Ingersoll-Rand car, in operations covering 22,000 miles on nine roads, has demonstrated its ability to maintain high-load-factor performance.

Trucks Play Important Part on the New Haven..... 782
A description of the set-up which enables this road to provide improved l. c. l. freight service through co-ordination of rail and highway operations.

EDITORIALS

Reforms in Business and Economic Progress..... 761
Standard Box Car Design Recognized..... 763

GENERAL ARTICLES

Railroad Exhibits Again a Center of Interest at World's Fair..... 764
Claim Agents Hold Annual Convention..... 768
Code Disturbs Tie Producers..... 769
Industrial Switching Allowances Criticized..... 771
Freight Car Loading..... 772
Characteristics of the Diesel Engine in Rail-Car Service..... 773
I. C. C. Blocks Signal Statistics..... 775
Automatic Compensator and Snubber for Driving Boxes..... 775
Labor Bill Reported By Senate Committee..... 777
Revised Pension Bill Unsound, by Frank V. Whiting..... 778
An Outside View of Railway Wages and Rates..... 780

MOTOR TRANSPORT SECTION

Trucks Play Important Part on the New Haven..... 782
Pick-Up and Delivery Service Proving Worth..... 785

NEWS..... 788

FREIGHT OPERATING STATISTICS..... 797

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

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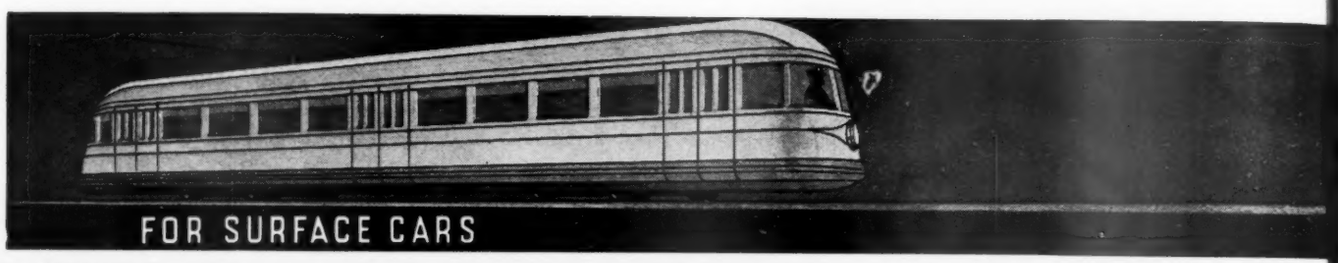

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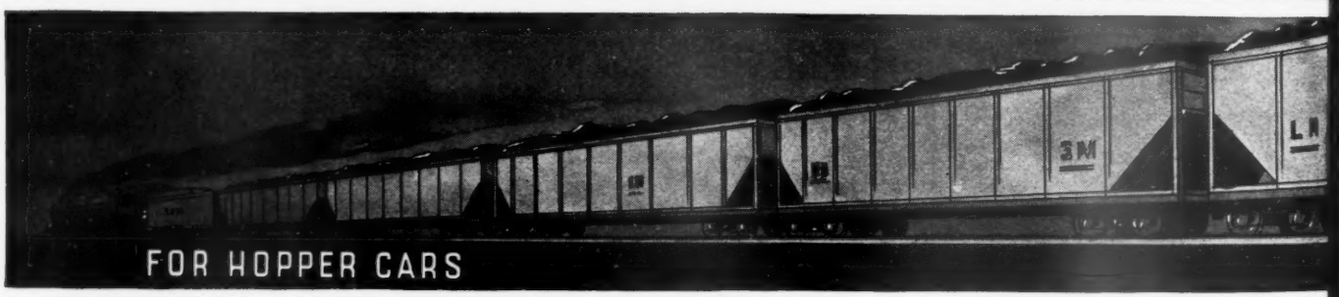

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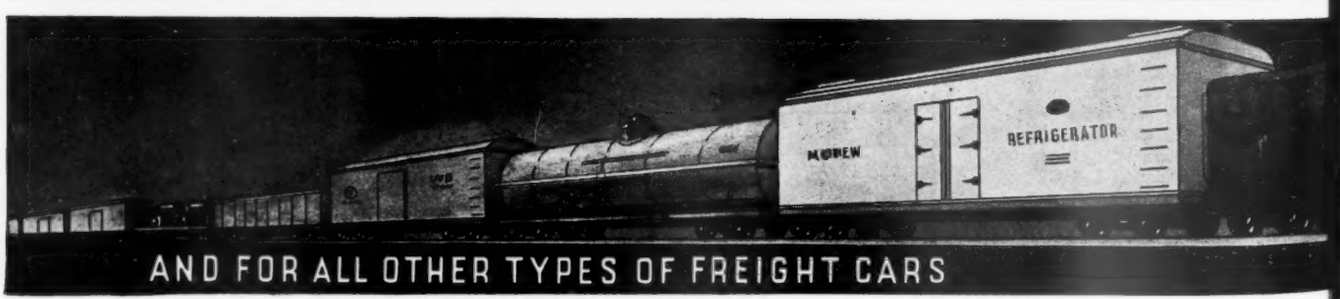

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Reforms in Business And Economic Progress

A meeting was held in Chicago on May 25 on the eve of the re-opening of the Century of Progress exposition which it is easily conceivable might be made to mark the beginning of a new century of economic progress in the United States. It was called by Alfred P. Sloan, Jr., president of the General Motors Corporation. It was attended by leaders in every line of thought and activity pertaining to economic progress. In issuing the invitations Mr. Sloan emphasized the contrast between two now widely disseminated views of the future. One of these is "that our progress in this world is finished; * * * that there are no worthwhile possibilities ahead; that we must live merely by dividing up available jobs; and that we must accept a lower standard of living." The other is "that the amount of available work can be continually expanded; that progressively higher standards of living will result through broadening the activities of industry by developments of science and industrial research." "This question is exceedingly important at this time," said Mr. Sloan, "on account of its influence in the determination of many of our national economic policies, vitally affecting the future of us all."

Can We Produce Too Much?

Some facts bearing upon the question to which Mr. Sloan referred very recently have been made public. Statistics compiled by the National Bureau of Research indicate that total production in this country in 1929 was about $683 per capita, and in 1932 only $309. Assuming an average of 4.3 persons per family, this was equivalent in 1929 to an income of $2,937 per family, and in 1932 of $1,329 per family. The results of an investigation just completed by the Brookings Institution indicate "that the producing plant and labor force of the United States are capable of turning out twice what we are getting today, and about 20 per cent more than we got in the most prosperous period preceding the crash of 1929." In other words, with present plant and labor enough could be produced to increase the average income per family to $3,523. According to the Brookings Institution there were sixteen and one-half million families the income of which was less than $2,000 in 1929, and the increased production possible with the present plant and labor force could increase all their incomes to $2,000, or increase by 42 per cent all family incomes which in 1929 were below $3,500.

"Over-Production" or Unbalanced Production?

These data, and especially the conclusion of the Brookings Institution, that only 20 per cent more than the output of 1929 could be produced with the present plant and labor force, are a complete answer to the gospel of economic despair and stagnation according to which it is necessary to reduce working hours because the available plant and labor force cannot be fully utilized without causing production greatly in excess of the effective demand for commodities, with the result of keeping millions unemployed. There could be no more grotesque economic absurdity than to contend, as virtually is contended by the advocates of various means of curtailing production, and especially by drastic reduction of working hours, that the average American family could not consume, or would not want to consume, what could be bought with the average family income of $2,936 in 1929, or with the average family income of $3,523 which the existing plant and labor force are capable of producing. The sixteen and one-half million families that had incomes of less than $2,000 in 1929 could as easily consume and enjoy $4,000 worth of products as do those who actually have an income of $4,000. Further economic development will be necessary to make average income per capita more than 20 per cent greater than it was in 1929, but a revival of economic progress can easily be made to result within the next ten years in an average production and income of $5,000 per family, and the principal beneficiaries of the increase of production would be, under sound governmental and business policies, the

very large majority of all families that received less than $2,000 in 1929.

With average production only $1,329 per family, as it was in 1932, or even $2,936, as it was in 1929, the great economic problems of the country are to establish relations between the various industries and between the incomes of the various classes of the people which will so increase the purchasing power of all as to make possible a vast increase of production. The needed increase of production will be hindered or prevented by either government or business policies that are predicated upon the assumption that unemployment ever has been or ever will be caused by *general* over-production. What one industry or class produces constitutes its power to purchase the products of other industries and classes; and as long as production is well-balanced every increase of production in any industry automatically creates increased power to buy the products of other industries. Depressions are caused, not by general over-production, but by unbalanced conditions, as a result of which some industries and their employees become unable to buy the products of other industries and their employees. Depressions are ended by restoring balanced production, and, thereby, balanced purchasing power. Prosperity is due entirely to a large production and distribution of commodities; and anything that interferes with an increase of production necessarily interferes with an increase of prosperity.

Sound Principles in Both Business and Government

The conference called by Mr. Sloan can, by starting a movement which will exert real influence upon government policies in behalf of sound economics, be made the beginning of complete economic rehabilitation and renewed economic advance in the United States, but if another great economic advance is to be made leaders in business as well as in public affairs will have to educate, discipline and reorient themselves.

The *Railway Age* is among the publications that have severely criticised many of the economic policies of the present national administration and contended that they are better designed to prevent than promote economic recovery and progress. This paper, however, recognizes the fact that both the depression and some of the drastic measures adopted or proposed for economic and social "reform" are attributable to widespread and serious abuses that recently have prevailed in business; that many men in high positions in finance, industry and commerce participated in these abuses for their own selfish purposes; that their misconduct has brought private business, and especially big business, into disrepute; and that to prevent the application of drastic and even destructive government reformatory measures it will be necessary for business, and especially big business, thoroughly to reform itself. If leaders in finance, industry and commerce are to start a movement for economic rehabilitation and advance that will command the public confidence necessary for it to be highly successful the economic principles and practices advocated by them will have to include sound principles and practices for business as well as for government.

Speculative "Whoopee" versus Creative Effort

The principal trouble with business which contributed toward causing the depression, brought the capitalistic system into disrepute and created so much demand for "reform" was that so many business men tried, during the recent period of speculative "whoopee," to get rich by manipulative rather than by creative effort. It is one thing for a banker to try to get a large income for himself by increasing the business and profits of his bank. It is an entirely different thing for him to try to get rich by selling the stock of his bank short. It is one thing for the head of a manufacturing company to try to get a large income for himself by increasing the output, reducing the production costs and enlarging the market of his company. It is an entirely different thing for him to try to get rich at the expense of his stockholders by using "inside" information in speculating in his company's stock. It is one thing for an industry, such as the automobile manufacturing industry, to try to increase its business and profits by making and selling trucks, for example, on their own merits as an agency of transportation. It is quite a different thing for it to try to enlarge its sales by the use of misleading propaganda in behalf of economically unsound government expenditures and against equal and fair regulation of private companies competing for the same business. It is one thing for a manufacturer to try to get rich by selling his products to the railroads in fair competition on the basis of cost and quality. It is quite another thing for him to try to get rich by using traffic as a competitive weapon, with the result of reducing the importance of cost and quality as influences in determining railroad buying, and thereby hindering progress in railroad economy and efficiency.

Why Capitalistic System is Vulnerable

The capitalistic system in the United States has become more vulnerable within the last decade or two than ever before for certain obvious reasons. One of the most important of these is, that the securities of many large corporations have become so widely diffused that the corporations are actually controlled by their managements or by owners of but a small fraction of their securities. This has given power to the managements or the controlling minority stockholders that can be used in ways that are directly contrary to the interests of the stockholders and the public. The future of the capitalistic system in this country will be jeopardized by this situation until all leaders in finance and business accept the plain fact that it makes trustees of those in actual control of a large corporation for all the stockholders and the public. Some of the reformatory legislation to which strong objection is made is intended to compel those in such positions of control to assume the obligations and perform the duties of trusteeship.

The end sought to be attained is justifiable whether the means adopted or proposed are justifiable or not.

Duties of Corporation Management

The management of a corporation of any kind that has thousands of stockholders, employs thousands of men and does a huge business has economic duties of a moral character to its stockholders, its employees and the public which forbid it to promote the interests of those who control it in any way that is inconsistent with the paramount interests and rights of its stockholders, its employees and the public. Extensive and detailed government regulation of all business is undesirable, but financial and business leaders who have used positions of economic power to help themselves to other people's money in disregard of the plain fact that their power imposed upon them obligations and duties of trusteeship, have created the arguments and public sentiment which give such formidable backing to extreme measures for government reform of business. Probably the only way to prevent the permanent application of government policies which will seriously handicap private investment, initiative and enterprise will be for all financial and business leaders voluntarily to accept the responsibilities and perform the duties of trusteeship which many of them already do accept and perform.

Railroad Experience a Lesson

The sentiment for government regulation of railroads was created principally by the practice of unfair discriminations to get traffic, by much financing which was done to enrich the financiers rather than to provide capital for purposes of service, efficiency and economy, and by a bad accident record. The grosser forms of unfair railroad discrimination were long since abolished, the financing of the railroad industry as a whole has been for twenty years more conservative and sounder than that of any other major industry, and our railroads have been made the safest means of transportation in the world. Nevertheless, government regulation of railroads, while less punitive than formerly, is still so comprehensive and drastic, and so unfair as compared with the regulation of competing carriers, that railroad management is heavily handicapped in all its efforts to make the net earnings necessary to increase efficiency and economy and improve service.

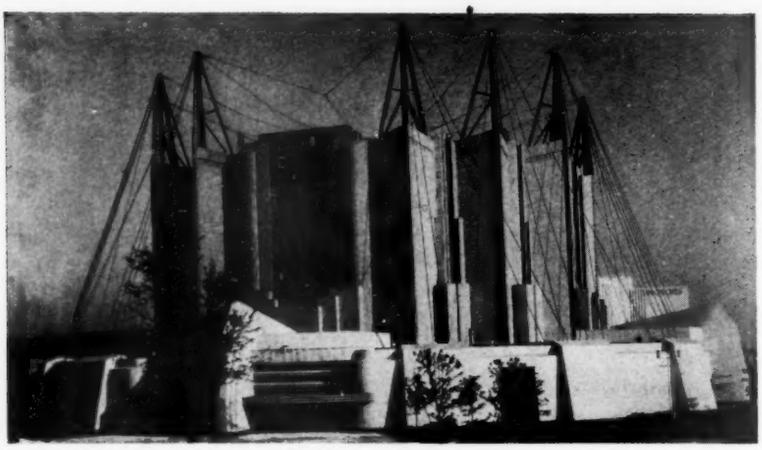
The railroads might have avoided much of the government regulation to which they have been subjected, and been spared many of the serious troubles they have had, if the predecessors of present railroad financiers and managers had a quarter century ago voluntarily effected reforms in financing and management which subsequent experience has plainly demonstrated would have been in the interest of the railroads. Financiers and managers of other major industries now stand, with relation to public sentiment and government policies, about where the financiers and managers of railroads had arrived a quarter century ago. They may well profit by the subsequent experience of the railways.

Standard Box-Car Design Recognized

A particularly timely recognition of the merits of the American Railway Association's standard steel box car is afforded by the action of the Chicago Great Western in ordering 500 cars of this design from the Pullman Car & Manufacturing Corporation. This is the largest order yet placed for steel-sheathed box cars built to specifications which were adopted as standard by the A. R. A. in 1932. According to P. H. Joyce, president of the road, the new cars are of "the latest improved type," weighing 3,500 to 4,000 lb. less than older type cars which they will replace. The addition of these cars to the Chicago Great Western inventory is part of a broad program to improve equipment conditions on this road by replacing obsolete cars, particularly those with arch-bar trucks, which are scheduled for retirement by the end of 1935 in the interests of safety and reduced maintenance cost.

The present A. R. A. standard box car is quite generally conceded to be the best balanced design yet developed, representing the combined experience of the Committee on Car Construction of the A. R. A., Mechanical Division, and a committee representing the American Railway Car Institute. The design was developed with the announced object of producing a car adapted to modern operating conditions and embodying an efficient use and distribution of materials which would permit making a substantial saving in weight without loss of strength or dependability. In other words, the car design was adopted as "representing the latest state of the art in reference to weight, cost, construction, strength, distribution and utilization of the materials employed and general utility, so that, when completed, the car would be too attractive for railroads to disregard and would be of such character that any road might properly and consistently adopt the design as standard and construct thereto its future equipment of this type."

That the principal objectives in the design of the A. R. A. standard box car have been attained seems to be amply demonstrated by the results of recently completed tests in which the performance of two of five sample cars, built for the A. R. A. to this design, is compared with the performance of cars of the Railroad Administration design developed in 1919 and the tentative A. R. A. design of 1923. In these tests, which constituted engineering research of the highest order, the extensometer and deflectometer method of measuring car reactions under various load conditions was used and showed the marked superiority of the standard car in that excessive local stresses were avoided and a uniformly low distribution of stress was secured in the car body structure, in spite of the lighter construction. Severe impact tests of the three designs of box cars were made under full axle loading and at speeds up to 18.3 m.p.h., the standard car showing no weaknesses in design or indications of distress or distortion.



The Dome of the Travel and Transport Building Is the Most Outstanding Structure On the Grounds

Railroad Exhibits Again a Center of Interest at World's Fair

Many changes in displays will appeal to visitors to Century of Progress Exposition of 1934

MORE than 60 of America's leading manufacturers, railways, air lines and other organizations have given their support in making possible the Century of Progress exposition of 1934 at Chicago which opens today for a five months' season ending October 31, to reveal the swift advancement and evolution of transport during the last 100 years. To emphasize the speed with which change is taking place, it needs only to be pointed out that many of the features of this year's Fair could not be shown last year for the reason that they did not then exist. Two examples of the newness of the leading features are the Union Pacific and the Chicago, Burlington & Quincy high-speed, streamlined trains which are being exhibited this year. The exposition again this year depicts in easily understandable displays and in many ways new and improved transportation facilities, new methods of communication, new processes of manufacturing, new weapons for fighting disease and new products.

Exhibits forming the travel and transport section of the Fair are located in the Travel and Transport building and on tracks adjacent to the building, while many vehicles appear in a pageant held in a theatre close by. The Travel and Transport building, with its unusual suspended dome, is a challenging development in architecture and is one of the most interesting buildings on the grounds, which cover 634 acres.

A Scene from "Wings of a Century"

The transportation exhibits include those of railroad and railroad supply companies, of automobile industries, of air transportation companies and of water transportation enterprises. The exhibits include railroad cars and locomotives, airplanes, products of manufacturers, motion pictures, paintings, animated models and dioramas, relics of various types of transportation equipment, miniature railway systems in operation and displays of the most modern developments of transportation contrasted with historical displays.

"Wings of a Century"

One of the most dramatic features and most popular spectacles at the Fair is a pageant of the progress of transportation, "Wings of a Century." It is being presented daily on a double-stage outdoor theatre located on the lake adjacent to the Travel and Transport building, with performances much more comprehensive and picturesque than those of last season. The episodes in the history of American transportation have been enlarged, and scenes historically important which were not presented last year because of the lack of rolling stock, are featured this year.

Two hundred actors, 70 horses, 7 trail wagons, 10 trains showing the evolution of locomotives and cars, a complete series of automobiles since their invention, a clipper ship, a river steamboat, a reproduction of Fulton's "Clermont," and a model of the Wright brothers' airplane in a scene of the first successful flight ever made, participate daily in this historic drama which is in six scenes, including 16 key episodes.

Exhibits of Trains and Equipment

Another outstanding feature of the travel and transport section of the Fair and one which commanded much attention last year is an elaborate display of railroad

passenger trains and cars and locomotives. This year these include an all-aluminum, ultra-modern observation room car built by the Pullman Company; the Union Pacific streamlined train; the Chicago, Burlington & Quincy Zephyr; a U. S. railway post office car; a Burlington modern train including a chain car, a dining car, a sleeping car and a solarium lounge car; a Baltimore & Ohio train, consisting of air-conditioned cars of the Capitol Limited and other B. & O. trains; a string of B. & O. cars, depicting the evolution from the primitive equipment of 1830 to that of the present time; a recently constructed Delaware & Hudson passenger locomotive; a Chicago, Milwaukee, St. Paul & Pacific electric locomotive and a streamlined coach; a U. S. Navy department helium car, and a Bettendorf Company all-steel Model 5 box car.

Modern equipment is contrasted with such rolling stock of early days as the first sleeping car built by the Pullman Company; the Chicago & North Western's locomotive, the "Pioneer"; a Rocky Mountain stage coach; a Conestoga wagon; a Chicago, Burlington & Quincy "Tea Kettle" of 1862; the Pennsylvania's "John Stevens;" and other relics of transportation. Mural paintings, animated dioramas, miniature railway systems in operation, and displays of the most modern developments of transportation, contrasted with historical effects, comprise the exhibits of the railroads and railroad supply companies.

American Railway Association

The Committee on the Prevention of Highway Crossing Accidents of the Safety Section of the American Railway Association is exhibiting again this year a highway crossing warning flasher signal. It is located at the south entrance to the Travel and Transport building.

Baltimore & Ohio

The exhibit of the Baltimore & Ohio, being historic in character, contrasts railroad transportation in the past with present-day service. One portion of the space contains an animated diorama of the laying of the first cornerstone on the B. & O. on July 4, 1828. Another portion of the space contains four animated dioramas picturing the original meeting of the officers of the B. & O. in February, 1827; the race between the Tom Thumb and a horse car on August 25, 1830; Harpers Ferry, and the B. & O. terminals at Locust Point.

Another portion of the space is constructed to resemble the interior of passenger cars, the size being about twice that of a standard car. One section of this giant car contains the fittings of a car of the Royal Blue line of 1893, a second section the fittings of a present-day reclining seat car, and the third a present-day lounge car. In a portion of the exhibit space next to this replica of passenger cars is a large animated diorama of Washington, D. C., while in another part of the space is the original "Atlantic" locomotive of 1832, with its wheels revolving as it stands suspended above a section of track. Besides this exhibit, the B. & O. is participating in the outdoor display and has loaned several pieces of equipment for use in the "Wings of the Century" pageant.

Chicago & North Western

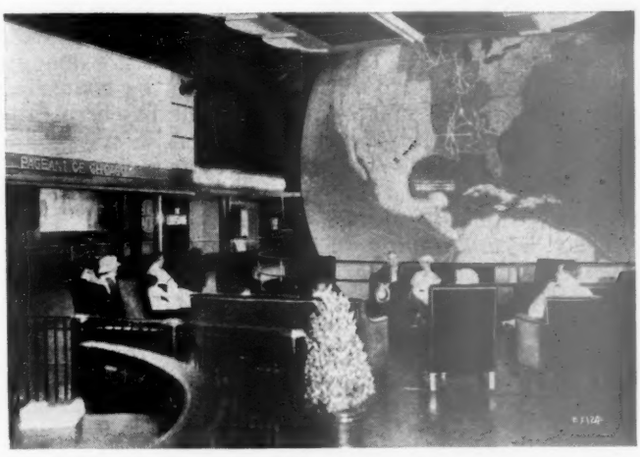
The Chicago & North Western has improved "North Western Park," which it established south of the Travel and Transport building last year, by adding motion, color and effective lighting, and has built a new exhibit within the building. While its Class H locomotive is still the central feature in the park, steam devices, illuminated wheel effects and flashing lights give the sense of motion this year. The entire park has been relandscaped and umbrella top tables in rainbow colors and chairs provide "picnic" facilities.

Relief Maps of Four Vacation Areas Are Shown in the Exhibit of the Chicago, Burlington & Quincy and Affiliated Lines

On the back wall of the North Western space inside the building is a scene of the old Kinzie Street station, one of Chicago's first passenger stations. In front are the Pioneer locomotive and a reproduction of two of the original coaches used on the Galena & Chicago Union Railroad, the parent road. A continuous show is staged in the exhibit space, starting with a re-enactment of the first run (actually made October 24, 1848) with the Pioneer in "motion" and with "Hank" and "Charley," engineman and fireman, at the throttle. Following this "run," stages built inside the coaches open, first on a North Woods scene, second on a Black Hills scene, and third on a large stage showing a moving panorama of western and northwestern vacation areas served by the North Western and connecting lines. A working model of a Class H locomotive, built by members of the railroad's shop forces, a display telling the story of safety on the North Western during the last four years and an illuminated and animated map of the system will also be shown.

Chicago, Burlington & Quincy

The Burlington outside exhibit occupies three tracks. On the west is the Zephyr, on the next an old locomotive and a mail car, and on the third a train composed of cars taken from de luxe fleets operated by the Chi-



National and International Trade Routes Are a Feature of the Illinois Central Exhibit

cago, Burlington & Quincy, the Great Northern, the Colorado & Southern and the Spokane, Portland & Seattle.

The U. S. railway post office car is manned by a crew of postal clerks, who demonstrate the actual method of sorting, classifying and distributing mail. This car is a replica of one of the first railway post office cars operated in the United States and built in 1862 in the railway's shops at Hannibal, Mo. Attached to it is a diminutive "Tea Kettle" engine with its diamond smoke stack and long pilot. At the head of the modern train is a large locomotive. Next is a chair car of the type carried on the Burlington's Chicago-Denver train, the Aristocrat, and exhibiting the latest style of adjustable chairs. Behind this is a dining car similar to those used on the Black Hawk operating between Chicago and the Twin Cities. Next is a Pullman car featuring different types of accommodations and illustrating the equipment carried on the Empire Builder between Chicago and Portland, Ore. The last unit is a solarium lounge car with appointments suggestive of a town club. The "Minnetonka," a 63-year-old locomotive of the Northern Pacific, is participating in "Wings of a Century."

In addition to its train exhibit in the outdoor transportation show, the Burlington and affiliated lines have an exhibit in the Travel and Transport building, which comprises relief maps of four outstanding vacation areas, Rocky Mountain National Park in Colorado, Yellowstone National Park, Glacier National Park in Montana, and Black Hills of South Dakota.

Chicago, Milwaukee, St. Paul & Pacific

The exhibit of the Chicago, Milwaukee, St. Paul & Pacific consists of an electric locomotive, a streamlined coach, a large animated wall map showing the Milwaukee system and a relief map and model portraying the scenic characteristics of the territory served by the railroad between Harlowton, Mont., and Seattle-Tacoma, Wash., a distance of about 850 miles. This year the electric locomotive is being displayed in the dome of the Travel and Transport building.

The animated wall map, 20 ft. by 8 ft., illustrates the service provided by the Milwaukee, various routes being marked by colored translucent inserts. In addition, five small stages opening into the face of the map show the attractions of the important resort regions. As the lights which traverse the colored inserts, progressively illustrating the passage of the train from starting point to the end of the route, reach the symbol for each of the 85 cities and towns, the name of each is illuminated. When the lights reach the terminals, modeled reliefs of a fisherman, a geyser, a ship and other subjects appropriately representative of each territory come into view in the stage opening. These various objects are done in brilliant colors and are thrown into relief by controlled colored lights. After each specified route has been progressively illuminated, the lines of the entire system are lighted. The map also has a unique topographical treatment to illustrate rivers, mountains, plains, deserts and other geographical features.

The relief map, 60 ft. by 5 ft., portrays the scenic characteristics of the territory traversed by the Milwaukee road between Harlowton and the Pacific coast, a distance of about 850 miles. Two miniature trains, one a passenger, The Olympian, and the other a freight, each drawn by an electric locomotive, are an interesting feature of this part of the exhibit.

Chicago, Rock Island & Pacific

The Chicago, Rock Island & Pacific has remodeled its exhibit which features the service and territory of its Golden State and Rocky Mountain limiteds in color motion pictures. A large illuminated map of the Rock Island Lines occupies one wall, while the auditorium part of the space where motion pictures are shown provides seats for 100 persons. A new lighting plan has been devised and a color scheme created in harmony with the large mural along the east wall depicting the history of the railroad. Uniformed attendants are on duty to give visitors traffic and other information. Special attractions of the 14 states reached by the Rock Island will be featured during the Fair.

Delaware & Hudson

The Delaware & Hudson is again exhibiting in the outdoor area a replica of the historic "Stourbridge Lion," first locomotive to run on an American railroad on August 8, 1829. This old locomotive stands out in sharp contrast with a modern passenger locomotive, No. 653, which has just been completed in the company's shops.

Illinois Central

National and international trade routes served by its system are graphically illustrated by the Illinois Central on a huge illuminated section of the World globe which

The Missouri-Kansas-Texas Displays Trains and Products

is the chief feature of its exhibit. Flowing lines of light over this relief map of the Western Hemisphere show the trade currents by land and sea. The section of the globe is 21½ ft. high and an automatic electric switchboard controls the moving lights along the railroad system and steamship highways. Nine mural paintings illustrate the role of transportation in civilization.

Around the walls runs a miniature railroad in full operation, with block signals, switching, passenger and fast freight service. The trains, built to a scale of one-fourth inch to one foot, are exact models of Illinois Central locomotives and cars. When President Roosevelt pressed the electric button that officially opened the 1934 Fair, these miniature trains began their journeys around the walls of the exhibit and the lighting effects of the other parts of the exhibit were turned on.

Missouri-Kansas-Texas

The natural resources of the Southwest are displayed by the Missouri-Kansas-Texas. Twelve of the principal cities served by the Katy are given a prominent place in the exhibit, which presents a graphic picture of the progress of the Southwest in the last 100 years, and of its four principal sources of wealth—cotton, wheat, live stock and oil. The story is told with dioramas and spe-

cially prepared printed matter, which is being distributed from the exhibit.

New York Central

The route of the New York Central between Chicago and New York is featured in that system's exhibit again this year. A 60-ft. relief map of the system, an ingenious mechanical panorama of the Twentieth Century Limited on its daily run, the stations and their location in Chicago and New York, and dioramas of Niagara Falls and the Highlands of the Hudson picture the characteristics of the system. A motion picture of the route of the Twentieth Century has been added to the exhibit this year.

Norfolk & Western

A dramatization of the manufacture and transportation of coal mined along the line of the Norfolk & Western comprises that railroad's exhibit in the General Exhibits building. The exhibit is in the shape of a huge block of coal, approximately 22 ft. square and 10 ft. high. In the interior of the block, which has been given the effect of having been hollowed out, is a realistic, miniature modern mining community, faithfully executed to the most minute details. Various operations, the movement of the coal down the conveyor chute, the cleaning and grading of coal in the tipple and the loading into railroad cars under the tipple are mechanically animated. An entrance in the back of the exhibit leads into a mine tunnel in which the actual coal mining operations are shown by means of a diorama.

Pennsylvania

A full-size steel cab from one of the Pennsylvania's largest locomotives features that road's exhibit again this year. The cab has a complete boiler back-head, with all equipment, including cab signals. The cab signals are synchronized with full-size, position-light roadside signals, which are in continuous operation at each end of the exhibit space.

An 82-inch driving wheel, rotating above a 152-lb. rail on a section of modern roadbed, is another feature of the display. Contrasted with this modern wheel is a driving wheel from the "John Bull," the Pennsylvania's century-old locomotive. The "John Bull" wheel rotates above a section of track taken from the old Camden & Amboy Railroad of 1832, a stretch of the original roadbed which is still in existence near Jamesburg, N. J. Artistic wood carvings of the "John Bull" engine and of a modern Pennsylvania locomotive are set in the frieze above the wheel and track displays. A miniature four-track roadbed, forming the foreground of dioramas depicting scenes along the right-of-way, with passenger and freight trains of all classes operated continuously over all four tracks, presents a remarkably realistic picture.

Miniature dioramas of the Civil War period, including passenger and freight train reproductions of that time, are also displayed. Co-ordination of railroad service with other modes of transportation, including airplane, bus, car-ferry, steamship and truck, is illustrated by large velour murals. A rail development display is also provided as an attraction of the exhibit. An added attraction appearing in the dome of the Travel and Transport building this year is a replica of the John Stevens locomotive built in 1825 and operated on a circular track.

Pullman Company

Outstanding and novel exhibits are the all-aluminum observation-room car of the Pullman Company displayed in the rotunda of the Travel and Transport building, and the Pullman car in the Union Pacific streamlined train. The observation-room car, named the "George M. Pullman," represents the third evolutionary milestone in Pullman construction—wood in 1859, steel in 1907 and aluminum in 1934. One outstanding feature of the car is a four-wheel truck cast of solid aluminum. The car, which is specially designed throughout, is air-conditioned.

Alongside the aluminum sleeping car in the rotunda, the Pullman Company is exhibiting sleeping car No. 9, the first Pullman built, and a vestibule of a Pullman car of 1887. In addition, the company has arranged an elaborate display of the various types of Pullman accommodations in another part of the Travel and Transport building. These are placed in recesses in the walls of the exhibit space, the ceiling of which forms a dome. A portion of the exhibit is devoted to "housekeeping" activities and indicates the volume of materials and supplies required to perform Pullman service. The laundering and care of sheets and pillow cases and the care of other equipment are also demonstrated. This portion of the exhibit is so arranged that other phases of Pullman operation may be substituted during the Fair.

Railway Express Agency

The Railway Express Agency has a complete new display to demonstrate the functioning of express service. In addition to providing extra conveniences for visitors, the exhibit includes several animated features. One is a scenic device to illustrate various stages in the movement of a package by express from sender to receiver, accompanied by a vocal description. Another is a series of enlarged lantern slides, picturing present-day express traffic. The exhibit also serves as the Railway Express office on the Fair grounds, where packages are received for forwarding and arrangements made for pick-up service. Experienced employees are on duty to explain various features of the exhibit and to give exhibitors, concessionaires and visitors any information regarding railway and air express, schedules and charges. In addition, this company has loaned three original Concord stage coaches which it retained for several years as relics. One of these is exhibited in the rotunda of the Travel and Transport building and two are used in the "Wings of a Century" pageant.

Supply Companies Participate

Another interesting part of the Travel and Transport section of the Fair is the exhibits of railroad supply companies which appear in the Travel and Transport group, the Electrical group, the Hall of Science and in special buildings. The railroad supply company exhibits, which are designed to interest both railroad men and the public, vary in type, some being a display of actual products, pictures of products or models of products, while others are devices and dioramas which show the manufacturing of the products, the operation of facilities or the development of the industry. Among the more important railroad supply company exhibits are the following:

Supply Companies in Travel and Transport Building

American Steel Foundries, Chicago.—A collection of car couplers, dating from 1840 to 1933, photographs of products and a mural painting, picturing the pouring of steel from a 20-ton ladle.

Association of Manufacturers of Chilled Car Wheels, Chicago.—Last year's exhibit, which depicted the advance in the art of chilled car wheel making from the day of the 10-ton freight car to the present-day 70-ton car, a mechanical unit designed to show the pouring of a wheel, oil paintings of the development of railroad

equipment, a pair of 400-lb. wheels of 1843, and a pair of 850-lb. wheels of 1933, has been moved to the Rosenwald Museum as a permanent display.

Bettendorf Company, Bettendorf, Iowa.—All-steel, Model 5 box car.

Poor & Co., Chicago.—Track fastenings. Rail joint Company—headfree and other types of joints. P. & M. Company—rail anti-creepers. Maintenance Equipment Company—Meco rail and flange lubricator.

Whiting Corporation, Harvey, Ill.—Photographs of products and colored slides. It is an interesting coincidence that this year the company celebrates its golden anniversary.

Supply Companies in Other Buildings

Electric Storage Battery Company, Philadelphia, Pa. (Electrical building).—Batteries, paintings showing the cycle of change in lighting and storage battery applications, such as railway, car-lighting and signals; and a section of the Exide battery used by Byrd on his Antarctic trip.

General Electric Company, Schenectady, N. Y. (Electrical building).—An all-day series of shows demonstrating the use of equipment, air-conditioning equipment for buildings, and a model of a 20,000-kw. mercury vapor turbine.

Union Carbide & Carbon Corporation, New York (Hall of Science).—Operating models and diagrams to explain the use of products, flashlights, batteries, carbons, prestone, ferrous and non-ferrous alloys and other metallurgical products, calcium carbide and compressed gases. A demonstration of oxy-acetylene welding is made periodically during the day.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. (Electrical building).—A Diesel electric generating set, a model of a Pennsylvania electric locomotive, full-size models of electrical equipment, a model of a steam turbine, a section of a water turbine generator, an operating model of a steel mill, air conditioning and the Little Theatre of the Home in which 30 shows are given daily depicting the electrifying of the home.

Claim Agents Hold Annual Convention

LEGAL and other aspects of accidents and personal injury suits were thoroughly discussed at the forty-fifth annual convention of the Association of Railway Claim Agents at Cleveland, Ohio, on May 16-18, Frank A. Hruska, chief claim agent of the New York Central, presiding. The program was confined to topics presented and discussed by members, and dealing with various phases of claim work, from accident prevention to the legal aspects of suits and trials.

Among the topics discussed were: Some Thoughts on Accident Prevention, by R. E. Woodruff, vice-president of the Erie; Legal and Other Aspects of Dust Hazards, by Paul Folger, attorney for the New York Central, the Merchants Despatch Transportation Company and the General Railway Signal Company; The Use of Moving Pictures in the Defense of Personal Injury Suits, by Frank Wenter, Jr., general claim agent of the Chicago & North Western; The Trial of Personal Injury Cases and the Relation Thereto of the Claim Department, by Jacob Aronson, vice-president of the New York Central; The Truth About X-Ray Examinations, by Charles F. Bowen, M. D., Columbus, Ohio; Investigation of Crossing Accidents, by E. O. Smith, district claim agent of the New York, Chicago & St. Louis; and Economy in Claim Department Operation in Depression Times, by F. D. Fauser, general claim agent of the Wabash. The meeting was attended by 189 railway representatives of 42 railroads, constituting 50 per cent of the member roads.

Officers elected for the ensuing year are: President, Parks C. Archer, general claim agent of the Alton, Chicago; vice-presidents, L. R. Willis, claim agent of the Chesapeake & Ohio, Richmond, Va.; E. M. Munn, chief claim agent of the New York, Chicago & St. Louis, Cleveland, Ohio, and F. D. Fauser, general claim agent of the Wabash, St. Louis, Mo.; and secretary-treasurer, F. L. Johnson, chief clerk and claim agent, general claims department, of the Alton, Chicago. The next annual meeting will be held in New York.

Addresses

President Hruska told how participation in the association's activities aids claim departments in functioning most efficiently, not only in their own work but in the general interest of the railways they serve. He also urged the claim agent to study the code of ethics adopted by the association and to accept it as a guide in order that he may do his full share to place the profession on the high plane where it belongs.

Mr. Woodruff gave an extemporaneous talk in which he urged claim men to report such bad practices as they observe to their officers so that they can be corrected. He also emphasized the necessity for co-operation in accident prevention.

Mr. Folger presented a detailed analysis of dust hazards, describing the effects of certain types of dust which are particularly hazardous because of their poisonous properties, and also describing pulmonary dust diseases caused by the inhalation of excessive quantities of dust. In discussing the legal phase of dust hazards, he said:

"It is presumed, in the absence of evidence to the contrary, that the employer has fulfilled his duty and provided a reasonably safe place and tools and appliances. Evidence that the employer has conducted his business according to the standards set up by that industry is the most conclusive proof of this discharge of his duty and will generally be sufficient to absolve him of negligence. It can also be said that the mere proof that the place, appliances and tools furnished are not sufficient to prevent a certain condition, will not permit the plaintiff to recover, but the plaintiff must go further and show that if a different place or tools or appliances had been furnished, the plaintiff would have been properly and adequately protected. If there is any failure on the part of the defendant to furnish a fitting or proper place or tools or appliances, the plaintiff must show that if such a place or tools or appliances had been furnished, such provision would have been sufficient to overcome this condition."

Mr. Smith contended that every crossing investigation should be made with one eye on the trial table. "Develop all the facts and the true facts," he said, "keeping in mind the things that may be needed if and when the case is tried."

"The work incident to a crossing investigation," he continued, "should start long before an accident happens. A good investigation cannot be made unless the employees charged with making reports of accidents are properly trained." Mr. Smith also discussed witnesses, obstructions, statements of persons,

(*Continued on page 781*)

Code Disturbs Tie Producers

Interference with established production practices, with resulting increases in costs to railroads, receives major attention at convention

THE large amount of time that industry is devoting to code problems and the disturbance to long established practices that code provisions are causing were evidenced in the annual convention of the Railway Tie Association at Cleveland, Ohio, on May 16-17. Not only were two of the three sessions of the convention devoted to the code, the negotiations culminating in the setting up of the crosstie producers as a separate self-governing division of the Lumber Code and to the interpretation of the provisions of the code finally promulgated, but this subject was in the background of most of the discussion at the remaining session. The meeting was attended by approximately 100 producers of crossties and railway purchasing officers. All sessions were presided over by B. N. Johnson, of B. Johnson & Son, Richmond, Ind., president of the association.

Shortly after calling the convention to order, Mr. Johnson reviewed the work of the organization for the past year. He referred especially to the activity of the association in the formulation of an independent code for the crosstie industry, in opposition to the attempt of the lumber industry to bring crosstie production under the Lumber Code, with its production quotas and price control. "I believe," Mr. Johnson said, "that certain benefits may be attained through the code that will be advantageous to the tie industry and to its sole customer, the railways. Certain rules of fair trade practice may be devised that will be for the general good. The crosstie industry will be governed by those familiar with its problems." Among the possibilities growing out of united action under the code, Mr. Johnson referred to the development of more comprehensive statistics of production, the more universal conservation of forest resources, the harmonizing of operating costs and accounting practices, co-operation with the American Railway Engineering Association in the establishment of standards for adzing and boring ties, a survey of crosstie inspection practices and studies of proper methods of seasoning ties of various timbers.

Purchasing Officers Attend Meeting

At the opening session, President Johnson recognized the attendance at the meeting of George Scott, chairman, W. J. Farrell, secretary, and several other officers of the Purchases and Stores division, American Railway Association, by calling on Mr. Scott who referred to the many changes in purchasing practices that are made necessary by the codes. In this respect, purchasing officers, like the tie producers, are charting new courses, he said. He warned the tie men that the railways are watching the new setup, for they are on trial before the buyers of their product.

Mr. Scott also deprecated the practice of some railways in departing from the specifications in purchasing

A Track Is no Better Than Its Ties

ties and urged universal adherence to these specifications by producer and buyer alike as a means of reducing waste due to rejections. At a later session, some of the producers criticized the railways for not accepting these specifications more universally and Mr. Scott replied that every deviation from the specifications results from a conspiracy between a buyer and a seller to violate its provisions.

During the convention, a committee of railway officers representing the Purchases and Stores section, A. R. A., met with officers of the Tie Association at which the latter presented their objectives in contending for a code for crossties separate from lumber. In reply, the railway representatives stated that they are not committed to support either the lumber or the tie code but are maintaining a waiting attitude. It was stated also that the railways themselves are not of one mind with reference to this matter and that, as a result, the various regional groups in the Tie Association should consult with the railways in their respective regions.

Discussion of the Code

The provisions of the code were presented to the members by E. J. Stocking, vice-president of the Hobbs-

Western Company, St. Louis, Mo., and the representative of the Railway Tie Association in code negotiations, and A. S. Fathman, acting secretary-treasurer of the organization. In general, these provisions relate principally to problems peculiar to the producers, although certain phases of the code also concern the railways, as for illustration, the exclusion from the provisions of the code of ties produced by farmers or small wood lot owners and sold directly to a railroad. If such a producer sells his ties to an intermediary agent, however, he comes under the code. Likewise, the code covers crossties only, to the exclusion of switch ties which, together with tie siding and other by-products of sawed ties, come under the lumber code. For purposes of administration, efforts are now being made to bring under the tie code all those mills, 50 per cent or more of whose output consists of crossties, and conversely to place under the lumber code all mills which convert less than 50 per cent of their output into crossties.

Officers Elected

At the concluding session, the following officers were elected for the ensuing year: President, E. J. Stocking, vice-president of the Hobbs-Western Company, St. Louis, Mo.; first vice-president, R. Van Metre, president of the Wyoming Tie Company, Chicago; second vice-president, H. R. Condon, vice-president of the Century Wood Preserving Company, Philadelphia, Pa.; directors, D. B. Frampton, president of D. B. Frampton & Co., Pittsburgh, Pa.; T. J. Turley, Bond Brothers Tie Company, Louisville, Ky.; E. A. Morse, vice-president of the Potosi Tie & Lumber Company, St. Louis, Mo.; and B. N. Johnson, B. Johnson & Son, Richmond, Ind.

R. L. Lockwood Addresses Meeting

At the session on Wednesday morning, R. L. Lockwood, director of the Section of Purchases on the federal co-ordinator's staff, described the work of his section and its relation to the purchase of crossties. He defined the purpose of the Section of Purchases as that of promoting economy in the selection and procurement of the materials required by the railways. It is not a direct buying agency. It has been the purpose to work closely with Division VI, Purchases and Stores, of the American Railway Association, and also with other existing organizations, such as the Mechanical division, A. R. A., and the American Railway Engineering Association, he said. A recent innovation is the setting up experimentally of a board of review of purchases, one of the objectives of which is to ascertain the degree of adherence to present standards. In some instances it is known that adherence is very high, in others low.

One of the activities of the Section is the stimulation of fundamental research, relatively little of which has been done by the railways to date, Mr. Lockwood said, as contrasted with experimentation and testing. To further this objective, a committee has been set up of men who have done outstanding work in research outside the railway industry, to determine what can be done. Numerous outside industries with outstanding research facilities have also expressed willingness to co-operate with the railways collectively in conducting fundamental investigations. There are now in existence plenty of laboratory facilities, Mr. Lockwood said. The problem is one of co-ordination of these facilities.

Mr. Lockwood closed his address by directing attention to the newer developments in transportation and to their effect on track construction of the future. He referred especially to the new trains of the Union Pacific and the Burlington, to the suggestions for lighter freight equipment and to the studies of locomotive counterbalancing, etc., that will reduce the shocks on the roadbed. He also warned the tie producers to watch developments in substitute ties, induced by improvements in alloy steels and in corrosion-resisting preparations.

The co-ordinator's staff is essentially a fact-finding agency, he said. As such, it is attempting to collect information from all sources, preliminary to drawing conclusions and initiating courses of action. Such studies as it has made of adherence to tie specifications indicate a lower degree of compliance than generally believed. This may cause the co-ordinator's organization to give this subject closer attention in the future, although the tie industry is unique in the fact that it has only one product and one customer.

The Crosstie of Today

By John V. Neubert*

The railroads have long been the largest user of timber. There are approximately 1,062,000,000 crossties in tracks, of which approximately 74,500,000 were renewed in approximately 360,000 miles of tracks in 1929; in addition, approximately 2,000,000,000 ft. b.m. of other timber were used.

About 30 years ago the railroads were confronted with the fear that the forests would not continue to produce sufficient timber to meet their needs economically, and the problem confronting them was to determine what substitution would have to be made to meet their requirements. In general, the railroads were then using timber from the virgin forests, and many felt that they were getting unusually long life from such timber as white oak, yellow pine, cedar and cypress. Practically no statistics were then available with regard to average tie life, but as traffic, axle loads and speed increased, the mechanical wear and the heavy renewal of ties prompted such studies. The renewals indicated that the railroads were then getting an average life of 8 to 12 years from untreated timber.

The American Railway Engineering Association appointed a committee in 1908 to study the possibilities of extending tie life by preservative treatment, and in 1909 this committee presented a report indicating that with proper handling, seasoning and treatment, the average life of ties could be extended to 16 years, which, of course, would reduce proportionately the number of ties required for renewals. The New York Central Lines gave careful consideration to the advisability of adopting methods for the preservation of timber, and concluded that if they could get an average life of 15 years they would be more than repaid for the increase in investment for treatment. To illustrate one thought on this subject, we installed approximately 7,000,000 crossties for replacement or maintenance on the New York Central Lines in 1915, of which 3,562,000 were untreated and 3,430,000 were treated. In 1931 our installations totalled 2,237,000, of which approximately 58,000 were untreated and 2,179,000 were treated. The annual replacements for that 17-year period averaged 4,468,000 ties.

The main objects of preservation were to prevent decay, retard the presence of moisture in the timber, and retain the original fibre of the wood for a much longer time. Beyond that, it permitted the use of timber with a short life untreated, such as second growth red oak, gum, beech, birch, maple, etc. The use of these softer woods also led to the general use of tie plates to resist

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and reduce mechanical wear on the bearing area of the tie; as a further aid, the pre-adzing and pre-boring of ties prior to treatment were introduced.

These various studies of tie life led to the development of standard specifications for the manufacture of ties and timber for all classes of railroad work, which specifications enable a manufacturer to so grade his products as to bring him a greater return and assure a railroad of a more careful selection of materials, thus reducing the cost of maintenance and upkeep.

Further study of renewal practices assisted greatly in extending the life of the treated tie beyond that of the untreated tie. One of the hardest problems the railroads had to solve was to educate the field forces not to take out a treated tie until it had given its full life. Furthermore, an untreated tie that has been in track for several years decays very rapidly when taken out of the track, whereas a treated tie can be re-used in important main tracks, or in branch lines or sidings.

It was the common practice, when untreated ties were used with few or no tie plates, to require the field forces to regage as much as possible of their assigned territory during the winter months. Today, with treated ties and tie plates, little or none of this is required.

All of these results have changed materially our opinion of the average life of ties and also of timber used in buildings and structures. The estimate of the A. R. E. A. of 16 years' life and of the New York Central Lines of 15 years for ties have been extended to a probable life of not less than 25 years, and western railroads which have used timber trestles to a large extent have many structures still in good physical condition after 20 to 25 years' service.

It is a common expression, particularly among the field forces, that "a track is as good as its ties;" this has been proven true during the last three or four years of depression. In 1915, the New York Central Lines, as I have said, used approximately 7,000,000 crossties. In that year 18.5 cents of every dollar spent for maintenance was charged to the crosstie account, and 9.5 cents of every dollar for rail renewals. In 1931 only 11.2 cents of every dollar spent for maintenance and upkeep went into the crosstie account, while 8.1 cents of every dollar went for rail renewals.

I believe that further study will show certain railroads how they can take a small percentage of ties of a class of timber that they have not been using. For example, in certain localities, where a railroad takes only oak ties and the forests in that territory produce a certain percentage of gum or pine, I think that railroad can, in fairness to the producer and the forests, use a certain percentage of the other woods.

Much has been written and said about composite ties of steel or concrete, or a combination of the two. I believe that these substitutes are still very much in the experimental stage. There are many problems which must be solved before they may compete with our present type of construction. The wooden tie is light in weight, easy to handle and the track fastenings can be applied easily. It is a non-conductor of electricity, neither brine nor the elements corrode it, and it possesses sufficient resilience to absorb the shock of the equipment and motive power. Roughly it takes a man-hour to replace a wooden tie in track. It costs more for a composite tie. Also, the wooden tie has a longer life today than the present composite tie.

After 100 years of improvement and development, the railroads are still the largest users of ties and timber. This use will continue to predominate in the track and in all structures where adaptability and flexibility of material are required.

Industrial Switching Allowances Criticized

WASHINGTON, D. C.

A LONG series of findings by the Interstate Commerce Commission that allowances being paid by railroads to individual industries for intraplant switching beyond reasonably convenient interchange points or services performed by carriers at such plants without charge represent an improper dissipation of railroad funds and in numerous instances afford reasonable ground for the belief that the Elkins act is being violated are recommended by W. P. Bartel, director of the commission's Bureau of Service, in a proposed report made public on May 21 in Part II of the investigation, Ex Parte No. 104, of practices of carriers affecting operating revenues or expenses. The report includes 453 pages, largely devoted to descriptions of the practices at the plants of the individual industries and recommends findings for each specific case. The general findings also recommended are as follows:

1. Where a carrier is prevented from performing an uninterrupted service to the points of loading or unloading within the confines of an industry, because of some action or disability of the plant, the point of interruption or interference shall be considered the point of receipt or delivery and any allowance to the industry for performance of service beyond such point, or the performance of service by the carrier beyond such point without charge should be found to be unlawful.
2. At practically all industries considered herein, interchange tracks are used by carriers for delivery and receipt of freight due to interference or interruption to the work of both the industry and the carrier which would be encountered beyond such tracks. Therefore, delivery or receipt on such tracks constitutes delivery or receipt under the line-haul rates.
3. Where the spotting service at an industry requires a service in excess of that required in making simple placement or the equivalent of team track spotting, such service is in excess of that required by a common carrier under its line-haul rate, and any allowance to the industry for performing such service or the performance thereof by the carrier without charge over and above the line-haul rate should be found to be unlawful.
4. The payment of allowances to the individual industries considered herein, or services performed by the carrier without charge beyond a reasonably convenient interchange point should be found to dissipate respondents' funds and revenues, to be not in conformity with efficient and economical management as contemplated by the interstate commerce act, and not in the public interest.
5. In numerous instances the payment of such allowances, or the performance of such terminal services by respondents without charge affords reasonable ground for the belief that the Elkins Act is, and has been violated.
6. The Commission should recommend to the Congress repeal or modification of section 15 (13) of the act, under which such allowances are made.

The report includes a list of railroads paying allowances aggregating $100,000 or more during the five-year period 1927 to 1931, inclusive, totalling $8,065,155, and also a list of industries receiving allowances aggregating $10,000 or more during the same period to the amount of $8,833,079. Returns to a questionnaire show allowances paid to 171 industries aggregating $9,054,359. The report says in part:

During the period of years in which the commission has considered allowances, many cases dealing with spotting services, allowances to industries, and so-called plant facility railroads have been considered. A number of these, such as the *Industrial Railways Case*, 29 I. C. C. 212, *The Tap Line Case*, 23 I. C. C. 277, and others, were considered on voluminous records as a result of exhaustive investigations. Rules have been promulgated by various carrier associations, for the guidance of the carriers in the disposition of allowances. Without binding force upon any individual carrier such rules have been disregarded.

About 1920, it was recognized in official classification territory that a careful study should be made by a special committee

regarding the practices of the carriers in that territory with respect to the spotting service on traffic handled by them. This special committee, after making the study, reported that the practices with respect to such spotting service were irregular, inconsistent, and demanded a remedy. The committee recognized that much of the service for which allowances were paid was service which was in excess of the carriers' obligations under their line-haul rates, and proposed that a tariff be issued for account of the carriers in that territory. The proposed tariff contemplated that simultaneously all tariffs providing for allowances to industries for terminal work in spotting should be cancelled, and it was stated: "The effect of such tariff would tend to reduce the amount of switching at present being accorded by carriers in spotting cars, which, as pointed out by the commission in the U. S. Cast Iron Pipe & Foundry Company decision, is *in excess of their obligations.*" (Italics supplied.)

The proposed tariff provided that where spotting service could not be performed on private or industrial sidings by means of one simple switching movement, a uniform charge should be applied for the remainder of the service; and that where an industry performed spotting service which was properly a carrier's duty, an allowance in an amount uniform to all such industries might be paid.

Due mainly to the opposition of the National Industrial Traffic League, the proposed tariff was never published. This record shows that the irregularities, inconsistencies and demand for remedial measures, which were found by the special committee to exist still exist, and have since been greatly multiplied. During the past decade, as this report later shows, allowances have been made throughout the country without "rhyme or reason." As late as March, 1931, the eastern carriers were attempting by change in their formula to obtain uniformity, and in August of that year one of the largest eastern railroad systems declined to grant an allowance to a certain industry solely on the ground that it was not engaged in the iron and steel industry, although at that time and for a number of years previously this system and its component lines had been granting allowances to many industries regardless of the nature of their business.

The futile efforts of the carriers in the past to obtain uniformity, and to limit allowances to services which are properly a part of their duty, offer no ground for belief that future efforts on their part would accomplish such objectives. That such conditions exist was recognized by the Congress in section 2 of the Emergency Railroad Transportation Act, 1933. Cognizance was taken that one of the burdens upon railroad transportation is allowances, and section 4 states that one of the purposes of that act is to control allowances, accessorial services, and the charges therefor, and other practices affecting service or operation to the end that undue impairment of net earnings may be prevented, and avoid other wastes and preventable expense.

Most of the allowances investigated in this proceeding would have been avoided by adherence to the rules. If for any reason the service for which the allowance is sought is one which, because of the desires or disabilities of the industry the carrier is not permitted to perform, the service performed beyond a reasonably convenient point of interchange must lawfully be considered a part of the industry's operations, in which the carrier has no interest, and for which it cannot assume any part of the cost without the payment of a rebate. In other words, in connection with such industry it should be determined to what point the carrier's duty with respect to delivery and receipt of freight, requires it to perform the switching. To such point an allowance may be proper, but beyond that point the carrier has no further interest directly connected with its business of transportation.

The reasons motivating the carriers to disregard or ignore these rules are usually grounded on consideration of traffic which can be diverted from other carriers to their lines by the payment of an allowance. The record discloses numerous cases in which unsuccessful formal complaints were brought before the commission by industries seeking an allowance. Notwithstanding the findings of the commission that such industries were not entitled to allowances, the carriers later granted them.

This proceeding also involves many industries which perform their own service without the assumption by respondents of the costs of any operation beyond the points of interchange. Some of these have unsuccessfully sought allowances or greater service by respondents than is now received, and in some cases respondents' refusal has resulted in unjust discrimination and undue prejudice and disadvantage to those industries. Others have made no application for allowance or greater service, due to the fact that the nature of the industry is such that the service of a locomotive not under its direction and control would be attended by extreme hazards to plant employees or property, and in some instances by the necessity for secrecy regarding manufacturing methods. Others do not desire the operation of respondents' locomotives within their plants because of interference with industrial operations, even though to perform the service themselves results in increased cost. We believe it must be conceded that industries such as are described in this paragraph are often compelled through the payment of freight rates to bear transportation charges which are dissipated by certain respondents in payment for or performance of services which are in excess of such respondents' legal obligations.

This report deals only with traffic handled in interstate commerce, and with Class I carriers. The principles announced herein, however, should be followed by all carriers subject to the Interstate Commerce Act. The commission should find generally that where a carrier is prevented, at its ordinary operating convenience, from reaching points of loading or unloading within a plant without interruption or interference by the nature or desires of the industry, or the disabilities of its plant, such as the arrangement or condition of its tracks, weighing services, or similar circumstances, the service involved beyond such points of interruption or interference shall be considered in excess of team track or simple switch placement, and that the payment of an allowance or the performance of service without charge beyond such points of interruption or interference is, and for the future will be unlawful.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended May 12 totaled 601,739 cars, a decrease of 2,466 cars as compared with the preceding week but an increase of 66,933 cars as compared with the corresponding week of last year. All commodity classifications except grain and grain products showed increases as compared with last year but ore and grain showed increases as compared with the week before. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

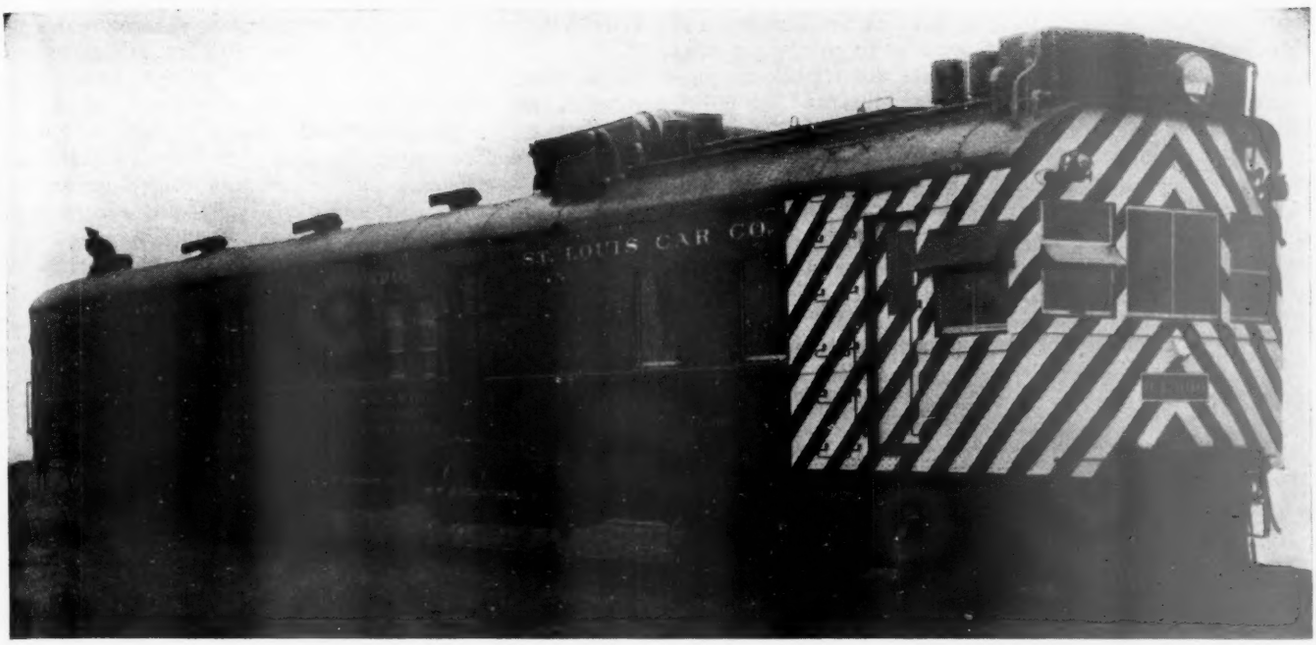
Week Ended Saturday, May 12, 1934

Districts	1934	1933	1932
Eastern	141,392	121,004	121,206
Allegheny	121,275	98,944	102,297
Pocahontas	43,241	34,782	30,464
Southern	84,687	82,026	78,360
Northwestern	80,430	67,348	60,233
Central Western	83,747	80,291	80,958
Southwestern	46,967	50,411	43,742
Total Western Districts	211,144	198,050	184,933
Total All Roads	601,739	534,806	517,260
Commodities			
Grain and Grain Products	28,457	39,073	28,526
Live Stock	15,705	17,460	17,051
Coal	102,872	82,355	73,528
Coke	6,690	3,761	3,016
Forest Products	24,836	20,233	18,783
Ore	18,182	6,726	2,593
Mdse. L. C. L.	165,013	164,681	181,562
Miscellaneous	239,984	200,517	192,201
May 12	601,739	534,806	517,260
May 5	604,205	527,118	533,951
April 28	608,654	538,809	554,197
April 21	589,453	496,512	562,527
April 14	578,837	498,182	566,826
Cumulative Total, 19 Weeks	11,086,423	9,336,783	10,616,174

Car Loading in Canada

Car loadings in Canada for the week ended May 12 totalled 43,960, an increase over the previous week of 507 and of 7,507 over loadings of the corresponding week last year, according to the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
May 12, 1934	43,960	23,506
May 5, 1934	43,453	25,414
Apr. 28, 1934	43,161	25,093
May 13, 1933	36,453	18,081
Cumulative Totals for Canada:		
May 12, 1934	787,159	447,334
May 13, 1933	637,372	328,316
May 14, 1932	786,717	408,326



The 600-Hp. Diesel-Electric Rail Motor Car Built by the Ingersoll-Rand Company and the St. Louis Car Company

Characteristics of the Diesel Engine in Rail-Car Service

Ingersoll-Rand car, in 22,000 miles on nine roads, demonstrates ability to maintain high-load-factor performance

EARLY in 1932 the Ingersoll-Rand Company and the St. Louis Car Company joined in the construction of a Diesel-electric rail motor car, for which the electrical equipment was furnished by the General Electric Company. Since its completion this car has been used for demonstration and test purposes on nine railroads, on the lines of which it has made over 22,000 miles hauling from two to five trailers in trains averaging 283 tons. During these runs it has created over six billion gross ton-miles. The power plant was operated with an average load factor while the car was in motion of 76.7 per cent and an average total load factor while the engines were running of 68 per cent.

The Car

The car is of the conventional type of construction, 77 ft. long over couplers, and has an unloaded weight of 208,000 lb. It is fitted with a 15-ft. railway postoffice and has a baggage compartment approximately 38 ft. long. The power plant consists of two Ingersoll-Rand, six-cylinder, 10-in. by 12-in., four-cycle Diesel engines developing 325 hp. at 550 r.p.m. This provides a minimum of not less than 300 hp. from each main generator. Each engine is directly connected to a G.E. Type DT 200-kw. generator and to a 25-kw., 125-volt auxiliary generator on the same shaft. There are four axle-nose-suspended, heavy duty traction motors. These are of the single-gear commutating-pole type, two mounted in each truck, with a gear ratio of 3.05. They are designed for continuous operation at 14 m.p.h. and at the same time to be good for a maximum safe speed of 80 miles an hour. These unusually severe requirements had to be met in order that the car might be able to perform any service which might be specified for a car of this general type and capacity on any railroad over the lines of which it might operate.

The control is the G.E. Type P arranged for single-end operation, in which the speed is controlled by the throttle with series-parallel and parallel motor combinations, the latter effected automatically by means of a relay, and a shunted-field step for higher running speeds. The principal auxiliaries are to single-stage, 25-cu. ft. air compressors and the radiator fan, both of which are operated from the 125-volt auxiliary generator, or from the 56-cell Exide Ironclad storage battery. A Vapor Car Heating Company's automatic oil-fired boiler, with a capacity of 750 lb. of steam per hour, is provided for the passenger-train heating.

The car is mounted on one six-wheel and one four-wheel truck. The six-wheel truck under the front-end carries a weight of 136,000 lb. at the rail, while the four-wheel truck under the rear end carries a weight of 72,000 lb. at the rail. All wheels are 36 in. in diameter and all journals 6 in. by 11 in.

Objectives

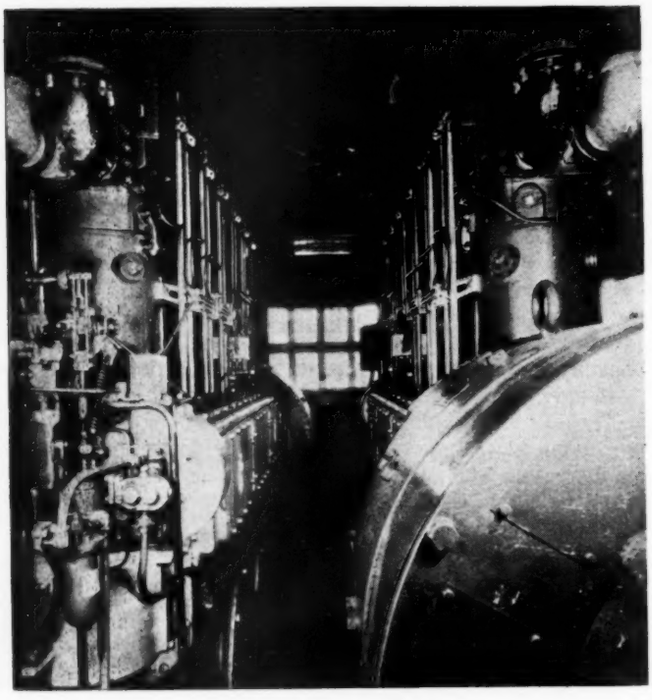
The purpose in building this car was to provide a means of determining what are the performance characteristics of a Diesel engine in rail-car service and, more specifically, to compare a 600-hp. Diesel-electric

unit with 600-hp. gas-electric units as to capacity and load factor. It was also the purpose to provide a suitable Diesel-electric rail car to handle standard heavy passenger equipment. On none of the railroads over which the Ingersoll-Rand car operated was it possible to secure a direct comparison with the service of a gasoline rail car of the same rated power-plant capacity. In general, however, it has been determined that cars with gasoline-electric power plants operate at an apparent load factor of about 50 per cent, while the Ingersoll-Rand car averaged for its 22,000 miles of varied service about 70 per cent. It was also determined that the 600-hp. power plant with its higher load factor made about the same miles per gallon of fuel as gas-electric cars with 300- and 400-hp. capacity.

In one case a direct comparison was made of the performance of the Ingersoll-Rand car and a gas-electric car with a 400-hp. power plant. The latter car weighed 80 tons and regularly handled a train with two trailers, each weighing 60 tons, or a total train weight of about 200 tons. The Ingersoll-Rand car with its 600-hp. power plant weighed about 110 tons and, at the outset, was given a train of three 60-ton trailers, with a total weight of about 290 tons. These trains represent approximately the same relative loading of 2 hp. per ton. Under these conditions the Diesel-electric car was able to make up one-half hour on a run on which the gasoline-electric car could scarcely make running time. Another trailer was added to the train hauled by the Diesel-electric car, making a total train weight of about 350 tons, a ratio of 1.7 hp. per ton. The Diesel car was still able to make the time.

Summary of Demonstration Performance Data Ingersoll-Rand 600-Hp. Oil-Electric Rail Car

	L.&N.	Mo.P.	St.L.-S.F.	C.M.St.P.&P.	C.B.&Q.	G.T.W.	B.&M.	Me.C.	B.&O.	Total
No. of trips	34	20	12	35	20	10	13	6	12	162
No. of trailers	2 and 3	2 and 3	2 to 5	2 to 4	2 to 4	2 to 3	1 to 5	1 to 4	2 to 3	1 to 5
Avg. train weight, tons	257	280	296	282	292	244	275	240	253	283
Avg. miles per trip	100	119	195	164	124	160	128	125	186	139
Avg. no. of stops	22	17	25	16	22	29	20	29	36	23
Avg. miles between stops	4.54	7.0	7.80	10.60	5.83	5.56	6.40	4.31	5.17	6.0
Avg. sec. per stop	45	87	108	112	98	53	87	93	61	86
Avg. schedule speed, m.p.h.	31.0	34.3	31.8	33.5	32.8	33.8	34.0	28.0	31.9	32.2
Avg. running speed, m.p.h.	33.5	38.3	35.5	37.0	38.7	37.5	38.8	33.5	35.9	36.5
Maximum ruling grade, per cent	1.25	1.3	1.6	1.0	0.8	0.8	1.5	2.2	1.0	2.2
Total mileage made	3,385	2,387	2,334	5,752	2,500	1,600	1,666	752	2,226	22,586
Total gross ton-miles	860,950	868,360	690,160	1,622,000	730,000	390,400	458,150	180,480	563,180	6,363,680
Total kw. hr. (tract.)	29,382	19,287	19,730	43,896	20,968	14,258	13,506	6,164	19,974	187,165
Total kw. hr. (aux.)	2,263	1,504	1,614	3,156	1,264	809	927	492	1,447	13,476
Total kw. hr. (total)	31,645	20,791	21,344	47,052	22,232	15,067	14,433	6,656	21,421	200,641
Total gal. fuel (engine)	2,825	2,070	2,214	4,624	2,082	1,443	1,415	666	2,013	19,352
Total gal. fuel (boiler)	214	70	70	445	308	219	305	147	470	2,248
Total gal. lub. oil (engine)	15	7	5	11	5	4	2.75	1.25	6	57
Car-miles boiler used	6,430	2,464	1,835	12,800	7,500	4,930	6,398	2,502	7,011	51,870
Miles per gal. fuel (eng.)	1.20	1.15	1.05	1.24	1.21	1.12	1.18	1.13	1.11	1.16
Car miles per gal. fuel (boiler)	30.0	35.2	26.2	29.0	24.3	22.8	21.0	17.0	15.0	23.7
Miles per gal. lub. oil (eng.)	225	341	466	420	500	400	604	605	371	396
Kw. hr. per gal. fuel	11.2	10.0	9.77	10.10	10.66	10.45	10.20	10.0	10.64	10.37
Kw. hr. per 1,000 g.t.m.	36.3	24.0	30.8	29.0	30.5	38.6	31.3	36.9	38.0	31.5
Total avg. load factor (per cent)	67.8	66.7	70.5	68.5	68.6	74.8	68.9	57.7	73.8	68.0
Running avg. tract. factor (per cent)	72.8	77.4	77.4	74.5	81.0	83.7	79.0	67.9	82.5	76.7
Aux. kw. hr. to total (per cent)	7.14	7.25	7.56	6.72	5.70	5.40	6.42	7.40	6.93	6.80



The Two Ingersoll-Rand-General Electric Power Plants

This run was over a rolling profile with no severe grades and required a schedule of 35 miles an hour in one direction and 30 miles an hour in the other. The power plant operated at a load factor of 80 per cent with the 350-ton train in the direction requiring the faster schedule, while in the opposite direction its load factor was but 50 per cent. The run was then tried in this direction with one power plant shut down and the train was successfully operated with a maximum of 300 traction horsepower.

On one occasion when the Diesel car was handling a train consisting of a mail and express car, a coach, a Pullman sleeping car and a private car it was called upon to pick up a carload of strawberries—a train which it was successful in starting and handling over a 1.2 per cent grade. Throughout its 22,000 miles of service the Diesel car never gave up a train. Two failures on the road—one electrical and one an engine failure—necessitated the shutting down of one power plant during a part of two trips.

Performance Summary

In the table is shown a summary of the performance of the Diesel car on each of the nine railroads on which it operated, together with totals and averages of its entire service. The operation included runs over relatively level lines and over rolling profiles, as well as lines with severe ruling grades. In most cases the runs were local with frequent stops. The train consist varied from one to five trailers, and the car operated regularly on certain runs which repeatedly required an average running load factor approaching 90 per cent. For the most part the schedules were not fast, but a number of runs required average running speeds up to 40 miles an hour. For the

entire 162 trips included in the performance data the stops averaged six miles apart and the running speed 36.5 miles an hour.

During this service a total of 185,165 kw. hr. of traction energy was developed and 13,476 kw. hr. was used by the auxiliaries, a ratio of auxiliary power to total of 6.8 per cent.

During the entire test period only 57 gallons of lubricating oil were used by the engine. This is about 50 per cent less than would be considered good practice in regular operation. The general average for the entire period of test service showed a running load factor of 76.7 per cent, based on the time that the car was actually moving, and a total load factor of 68 per cent, based on the time the engines were actually running.

I. C. C. Block Signal Statistics

THE annual statistics of block signals, automatic train control, etc., on the railroads of the United States, as of January 1, 1934, have been compiled by the Interstate Commerce Commission's Bureau of Safety, but because of lack of funds this report will not be printed. The tabulations are available for inspection at the offices of the Bureau of Safety. The main summary shows:

MILES OF RAILROAD BLOCK SIGNALED, JANUARY 1

	1934	1933	1932	1931	1930
Automatic	62,865.5	63,295.7	63,530.6	62,726.0	60,162.0
Non-automatic	48,954.3	50,284.9	52,792.7	54,144.0	55,551.7
	111,819.8	113,580.6	116,323.3	116,870.0	115,713.7

The decreases are largely due to reductions in traffic resulting in temporary discontinuance of the block system and the abandonment of portions of certain railroad lines.

There are now 22,453.1 miles of road and 33,735.7 miles of track protected by light signals, three kinds; color-light, position-light and color-position-light.

The record of locomotives having automatic-cab signals which give continuous indications shows these signals in use, with or without automatic train control, on 3,857.6 miles of road and 7,823.6 miles of track.

There are 8,668.8 miles of road, 15,808.2 miles of track, 6,224 locomotives and 42 motor cars equipped with automatic train control, with or without cab signals; and in addition, there are 1,757.6 miles of road and 4,097.2 miles of track over which there are operated 2,399 locomotives and 675 multiple unit electric cars equipped with automatic cab signals only without automatic train control.

There are 312 railroad grade crossings and 25 gauntlets protected by automatic interlocking.

Centralized traffic control has been extended to include 1,326.6 miles of road, these installations including a total of 247 passing sidings, 995 switches, 514 semaphore block signals and 2,050 block signals of the light type. In addition to the centralized traffic control installations there are 504 points from which 654 single switches, 275 crossover switches, 1,000 semaphore signals and 1,953 light signals are remotely operated.

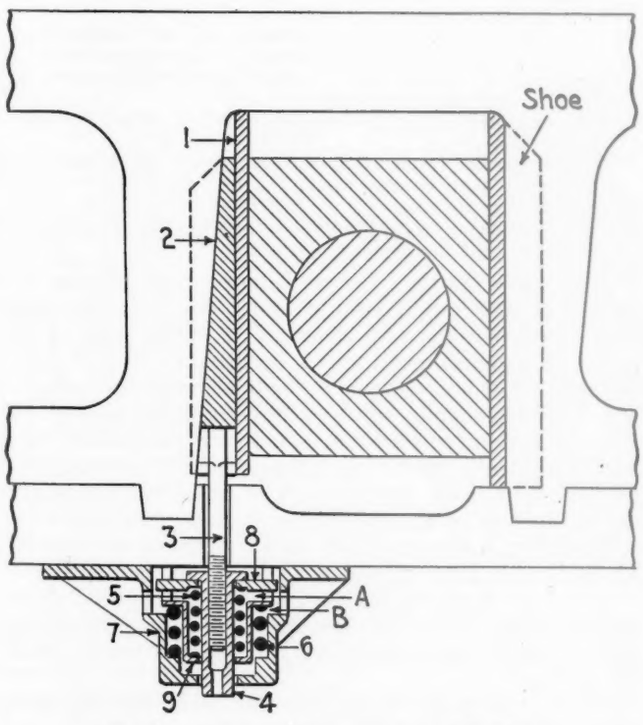
The miles of road on which train orders are transmitted by telegraph decreased from 96,091 in 1933 to 94,627 in 1934; and the mileage on which train orders are transmitted by telephone decreased from 151,443 in 1933 to 151,300.

Automatic Compensator and Snubber for Driving Boxes

IN the modern locomotive, despite great increases in weight and power, the design of driving boxes and the means for retaining them in alinement have, in general, changed but little from the practices which obtained in the light locomotive used many years ago. The driving box still uses a crown brass and cellar. The pedestal jaws of the frames are still provided with a parallel faced shoe on the front side and a tapered adjustable wedge on the back side, the frame structure itself being strengthened by a pedestal cap or binder to prevent distortion under the reciprocating stresses transmitted through the driving box.

This arrangement provides for the necessary vertical movements of the driving box while the locomotive is in operation. The horizontal stresses transmitted by the rods are reversed twice for each revolution of the driving wheels, the driving box being forced against the shoe as the piston is driven forward by the steam and against the wedge as the piston makes its backward stroke. Due to journal friction and to friction between the driving box and the shoe or wedge as it moves up and down in service considerable heat is generated and expansion of the driving box and other parts results.

In order to assure free vertical movement of the driving box after heating and expansion have taken place, it is essential to so adjust the position of the wedge when all parts are cold that the distance between the faces of the shoe and wedge is greater than the longitudinal thickness of the driving box when at normal operating temperature. This required adjustment results in a clearance or air gap between the driving box and wedge as the piston moves forward and between the driving box and shoe as the piston moves backward. Unless this clearance is left great enough to allow for the maximum expansion caused by heating, the driving box will seize or become stuck between its shoe and wedge. As a



Franklin Automatic Compensator and Snubber

consequence the driving box is slapped back and forth against the shoe or wedge, twice for each revolution of the wheels. Furthermore, as wear takes place the clearance is steadily increased. Inasmuch as the adjustment of wedges is a disagreeable and awkward, as well as an uncertain job, and as the possibility of a stuck or hot driving box must be avoided, the clearance is almost invariably adjusted considerably in excess of the minimum requirements. This, of course, increases the pound of the box which results in excessive wear of the driving box and surrounding parts and a further increase in the clearance.

To eliminate this detrimental clearance or air gap and thereby greatly decrease the wear of driving box and adjacent parts and at the same time positively insure free movement of the box at all times, the Franklin Railway Supply Company, New York, has developed an automatic compensator and snubber for driving boxes which replaces the old-fashioned wedge with its hand-adjusted wedge bolt.

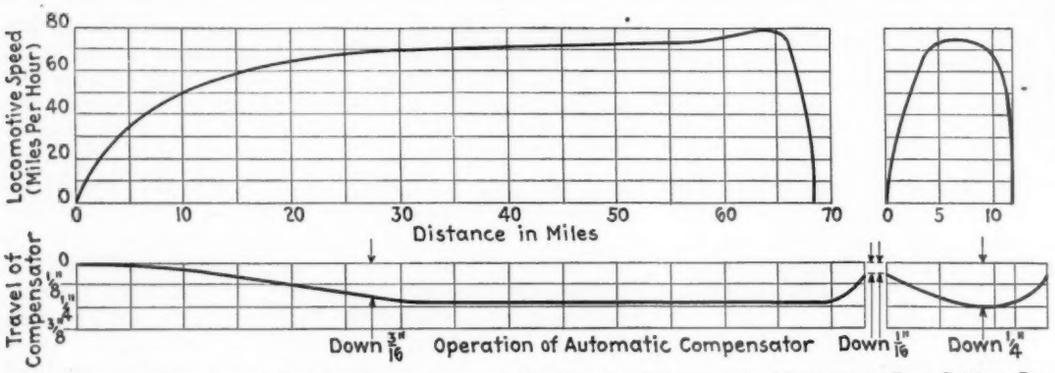
One of the illustrations shows the construction of the device, the parts of which are as follows:

1 Floating plate (with parallel sides).
2 Compensator (tapered wedge to take care of expansion and contraction due to changes in temperature and to take up wear automatically).
3 Adjusting bolt (mechanical extension of the compensator).
4 Adjusting nut (for initially adjusting the compensator).
5 Compensating spring (small inner spring—preliminary resilient means for compensator).
6 Snubber (large outer spring—pre-loaded or locked up under compression).
7 Snubber pocket (attached to pedestal binder—mechanical stop for limited snubber movement).
8 Adjusting-spring seat.
9 Adjusting-spring pocket (preliminary stop for compensator and upper seat for snubber spring).

The compensating spring *5* more than carries the weight of the compensator *2* and holds it in the position shown without any clearance on either side of the box. As expansion of the box occurs the compensator *2* is forced downward against the resistance of spring *5* which offers the only opposing force until the spring seat *8* comes in contact with the shoulder or preliminary stop on the spring pocket *9* and closes up the clearance *A*. In the event of the development of abnormal forces and the closing up of the gap *A* the compensator can move still further downward, but such movement is now resisted by the force of the pre-loaded snubber spring *6*. The movement of the snubber, however, is limited to the amount of gap *B* by the shoulder on the adjusting spring seat *9* coming into contact with the shoulder on the snubber pocket *7*.

As wear between the driving box and retaining parts takes place, the compensating spring *5* slowly and steadily forces the compensator *2* upward and at all times prevents the development of driving-box clearance, regardless of wear or changes in dimensions due to expansion. Wear, therefore, is not extensive and rapid as would be the case if any clearance had existed. Such slight wear as occurs can be compensated for readily by adjustment of the mechanism, effected by the adjusting nut *4* being turned to restore the gap *A* to normal.

The operation of this compensator and snubber when applied to a locomotive is illustrated in Fig. 2, which has been made up from a portion of a graphically recorded test. The upper graph is a curve drawn between the distance the locomotive travels in miles and the speed in miles per hour. It will be noted that the locomotive, having started cold from the terminal ran for a distance of approximately 68 miles, reaching a maximum speed of 80 m.p.h. After a station stop it again quickly accelerated the train up to a speed in the neighborhood of 75 m.p.h. and then made a second station stop after traveling 12 miles.



Compensator Movement	Expansion of Box
1/16 in.	.0052 in.
3/16 in.	.0156 in.
1/4 in.	.0208 in.

Chart Showing Operation of Franklin Compensator and Snubber in Automatically Maintaining Free Driving Box Movement without Shoe or Wedge Clearance

The lower graph shows the location or movement of the compensator as ordinates and its abscissa plotted in the same distance increments as the upper graph. In this connection it should be realized that since the taper on the rear of the compensator is 1 in. in 12 in., an expansion of the box of only 0.0208 in. in the horizontal plane results in a vertical downward movement of the compensator of 12 times this amount, or ¼ in. The driving-box expansion corresponding to various increments of compensator movement is given in the table at the right-hand margin of the chart.

This chart develops the fact that from a cold start at the terminal, with a gradual acceleration up to 70 m.p.h., during which time the locomotive traveled a distance of about 28 miles, the compensator was depressed 3/16 in. to allow for the box expansion of 0.0156 in., or approximately 1/64 in. This expansion started at a relatively low rate and was not discernible until a distance of seven miles had been traveled, after which, as would be expected, it took place at a more rapid rate. After the locomotive had traveled 30 miles, the speed was maintained between 70 and 80 m.p.h., and practically no further expansion of the box was discernible, since friction causing heating was now compensated for and balanced by radiation. However, during the first station stop sufficient time elapsed for radiation to cool the box to such an extent that the compensator moved up to within 1/16 in. of the position it occupied at the start of the run.

In other words, before starting from this station the box showed an expansion of 0.0052 in. only. Acceleration was then rapid and a speed of 75 m.p.h. was reached six miles after leaving the station. Due to the great amount of work transmitted through the driving boxes

and the resulting heat developed, together with the inability of the boxes to radiate this heat, we find when the locomotive had traveled a distance of only eight miles the compensator had moved downward ¼ in. below its position when leaving the terminal and 3/16 in. lower than the position it occupied when starting from this station.

In this application, since the snubber was adjusted to come into action after ¼-in. travel of the compensator, the compensator had moved a sufficient amount as to reach the point where the snubber had just come into play.

The expansion corresponding to this 3/16-in. compensator movement since leaving the station is approximately 1/64 in., whereas the total expansion of the box since leaving the terminal when cold is equal to 0.0208 in. During the second station stop (not shown on the portion of the chart reproduced) heat radiated from the box resulted in its contraction and the upward movement of the compensator so that when starting from the second station the compensator again occupied the position of only 1/16 in. lower than when it was cold, equivalent to an expansion of the box of 0.0052 in.

These graphs portray the ability of the compensator and snubber automatically to care for expansion and contraction of the driving box and its surrounding mechanism with the elimination of the driving-box clearance which has always existed with the conventional shoe and wedge construction hitherto employed.

Labor Bill Reported By Senate Committee

WASHINGTON, D. C.

THE Senate committee on interstate commerce on May 21 favorably reported to the Senate with a series of amendments the bill to amend the railway labor act, including provision for the creation of a national board of adjustment and a new National Mediation Board to take the place of the present Board of Mediation. The bill is S. 3266, originally introduced by Senator Dill, chairman of the committee, in the form proposed by Co-ordinator Eastman as a substitute for the bill proposed by the Railway Labor Executives' Association, together with amendments made by the committee after hearings and conferences with Mr. Eastman. The bill as revised by the Senate committee was then introduced in the House on May 21 as H. R. 9689 by Chairman Rayburn of the House committee on interstate and foreign commerce, which began hearings on the bill on May 22. Mr. Eastman was the first witness, repeating the statement which he had previously made before the Senate committee. The bill as revised contains slight indication of the amendments proposed by the railroads, which had vigorously opposed the proposal for a national board of adjustment. The principal provisions of the revised bill are explained in the committee report as follows:

The most important change in the bill is the creation of what is termed the "National Adjustment Board." This board will have four divisions. Each division will have a neutral member, so that these divisions will be able to make decisions. The present regional boards have no neutral members and for that reason are often unable to arrive at decisions.

One of the principal weaknesses of the present law in practice has been that regional boards have not been set up in some sections of the country for settlement of the disputes in some of the crafts. Both representatives of the carriers and of the employees agree that the setting up of boards for the settlement of disputes should be made compulsory, when necessary.

As introduced in the Senate, Senate bill 3266 provided only for the creation of a national board. Your committee has amended the bill authorizing the divisions of the National Board of Adjustment to provide for regional boards whenever, in the discretion of any division, it is desirable to create a regional board. The regional boards will be created for temporary periods, but their members are to be chosen in the same manner as the members of the National Board of Adjustment and their decisions are to be binding and enforceable in the courts.

The four divisions of the National Adjustment Board are to be independent of one another. Each division is to adjust the disputes and grievances of a certain group of crafts, as specified in the bill. It may be subdivided to take testimony, but the entire division makes the decision. Thus, there will in effect be 18 boards for the taking of testimony and 4 to make decisions.

Each division will be composed of an equal number of representatives of the railroads and employees respectively, and each will compensate its representatives. In case of a deadlock, the members of the division may select a neutral member. If they cannot agree, then the National Mediation Board will select the neutral member, and he will be paid by the government.

The bill also provides for the establishment of regional or system boards of adjustment, if the railroads and the employees desire to set up such boards voluntarily. The ideal situation would be to have disputes and grievances settled by the men and management on the several properties without any recourse to adjudication by an outside tribunal. Some of those advocating this legislation believe the fact that there is a compulsory board to which grievances may be taken will greatly increase the settlement of disputes by voluntary adjustment boards.

Another extremely important change from the present law which this bill provides is that it prohibits any carrier from providing financial assistance to any union of employees from funds of the carrier. It also prohibits the railroads from interfering in any manner whatsoever with employees joining or refusing to join any organization or union. The bill specifically provides that the choice of representatives of any craft shall be determined by a majority of the employees voting on the question. This prohibition is not new. Congress has declared it three times; in the present Railway Labor Act, the Bankruptcy Act and the Emergency Transportation Act. But there are no penalties against its violation. This bill provides severe penalties.

Section 4 of this bill abolishes the present Board of Mediation, consisting of 5 members, and establishes a new board called the "National Mediation Board," consisting of three members.

The present board has many important accomplishments to its credit. It has had many difficult tasks to perform. Its powers are wholly persuasive. The fact that under this bill the National Adjustment Board will deal with many grievances now brought before the Board of Mediation, makes it unnecessary that the new board shall have such a large membership.

This new and smaller board will have power to select and appoint employees to act as mediators under the instruction of the board with the same freedom to delegate its work as the Interstate Commerce Commission now possesses. This board will appoint the neutral members when necessary to obtain decisions of the National Board of Adjustment and is also authorized to set up a neutral committee to determine what employees shall vote in the elections to determine the representative in any grievance.

This determination of what employees shall be allowed to vote is one of the most controversial subjects in the settlement of disputes. Your committee amended the bill so that if the Mediation Board found it might arouse antipathy on the part of the carriers or the employees in deciding questions of this kind, it could create a neutral committee to do that work, so its own usefulness of settling disputes that might arise thereafter might not be impaired.

Advocates of the bill have expressed confidence that it would be passed at this session of Congress, although it is understood that some of the railroad labor organizations are prepared to oppose certain features of the bill, but it is understood that they have given up the idea of passing the six-hour day bill at this time and have been informed that the President is not in favor of it because of the increase in railroad operating expenses involved, estimated at $350,000,000 to $500,000,000.

The House committee on interstate and foreign commerce on Thursday reported the six-hour day bill without recommendation, which action may forestall the effect of the petition to discharge the committee from further consideration of the bill, which was to have come up May 28.

Revised Pension Bill Unsound

Senator Brown's measure has defects of Hatfield bill which labor's spokesmen strongly opposed

By Frank V. Whiting
Chairman, Board of Pensions, New York Central Lines

THE proposed pension bill substituted for S. 3231 drafted by a sub-committee (of which Senator Brown is chairman) of the Senate Committee on Interstate Commerce and reported favorably to the Senate last week (*Railway Age*, May 19, page 741) is, with respect to the actuarial and financial unsoundness of the plan, in principle, the same as the Hatfield bill, S. 4646, which was opposed vehemently by the Association of Railway Labor Executives through its counsel, Donald Richberg, at the hearing in January, 1933, before the Senate subcommittee, of which Senator Robert F. Wagner was the chairman. Mr. Richberg characterized this bill with reference to the onus placed on the railroads and their employees, as follows:

> Frankly, I do not think they (these questions) can be answered by giving a pension board a blank check, signed by the railroads and their employees, and by authorizing the board to pay whatever cost is necessary out of the earnings of the railroads and the wages of the employees. No such unlimited grant of authority will ever be approved by Congress or the railroads or the great body of railroad employees * * *. (Record, page 16.)

The foregoing and subsequent quotations from the testimony of Mr. Richberg at the hearings held in January, 1933, on the Hatfield bill, S. 4646, are particularly applicable in protest of the substitute bill. In discussing the fact that the Hatfield bill, S. 4646, made no provision for reserves for either past or future service, Senator Burton K. Wheeler, a member of the subcommittee, asked Mr. Richberg:

"Do you mean that it builds up no reserve at all?"; to which Mr. Richberg replied:

> That is the difficulty, of course, with leaving the entire matter to be handled by a board to be created. We do not know what they are going to do. It may be claimed that the pension board under this bill could build up funds. The bill provides in plain language that the percentage, which is to be determined by the board, of the assessment shall be determined from time to time in such amount as may be necessary to pay pensions, disability payments and expenses becoming payable from time to time. That sounds like a straight assessment proposition. (Record, page 43.)

In response to this, Senator Wheeler said:

> If that is the interpretation put on the bill, then I am frank to say to you that *I cannot see where that would offer any assurance that the man who pays in for any period of time when he reaches old age would ever be able to get anything.*

No Reserve for Past or Future Service

It is clear that the substitute bill, like the Hatfield bill, S. 4646, is entirely devoid of any factor that tends to financial or actuarial soundness in that it provides no reserves for liabilities arising from past or future service. Section 2 (b) of the substitute bill recognizes this situation by specifically providing for a special report from the board not later than four years from the effective date in which it "shall make specific recommendations for such changes in the retirement system hereby created as *shall assure the adequacy and permanency* of said retirement system on the basis of its experience and all information and experience then available." In this respect the Hatfield bill, S. 4646, contains substantially the same language as that in Section 2 (b) of the substitute bill—i.e., Section 8 of S. 4646 reads: "The Board * * at intervals of not more than *two* years shall cause to be made such actuarial surveys and analyses as may be necessary for the proper administration of the pension system hereby established to *assure the adequacy and permanency thereof* * *."

This section, in the words of Mr. Richberg, gives "a pension board a *blank check* signed by the railroads and their employees." There can be no denial of the fact that the substitute bill is absolutely unsound from a financial standpoint. There is not the slightest attempt to fund it. In other words, it is on a "pay as you go" basis and future contributions are mortgaged to pay for liabilities created currently. No carrier or employee can possibly know the large sums of money that the granting of pensions under this bill will require from the carriers and the employees. Further, there is no provision to set up a fund currently for the continuing, accruing liability by reason of service rendered, or any effort to pick up over a period of years the liabilities created by reason of past service.

Injustice to Younger Men

Mr. Richberg, at the hearing on the Wagner-Crosser Bill held in January, 1933, stated:

> They (the employees) do not understand the cost of the pension program, and they do not know that under either of these bills there is a very large cost imposed upon the employees for this insurance and this pension, and also that the employees are expected to pay a very large cost for providing pensions for some one besides themselves; that is, that the younger men in the service will have to pay, under any program, a very large amount of money in order to provide pensions for those who have not built up, by their own contributions during their own period of service, those pensions.
>
> That is one of the things that it is absolutely essential to make clear to the railway employees, because they want to face this thing honestly. *I know of no worse service that could be performed for the employees than to push forward a piece of legislation which, after it is enacted, imposes upon them burdens which they have not anticipated and which they do not understand.* (Record, page 16.)
>
> The point that I want to make is that the questions set forth in this bill are, each and every one of them, questions which cannot be ignored. Section by section the question which is propounded in this bill has got to be answered; and I will say frankly to Senator Hatfield that I do not think the proper way to answer it would be to refer the problem to a board to be created in the future with unlimited power to determine how much money shall be paid by the railroads to their employees, what percentages shall be raised to meet the promise of a very liberal type of pensions; because if such a board can be created, if its legality could be sustained, which I would question, the amount of opposition that would arise when it once began to function would make the farm relief bill seem like a howling success—and I believe it is not generally regarded as such. I mean the past one. (Record, page 18.)
>
> If that means that no reserve funds are to be set up, if that means that this pension is a hand-to-mouth proposition, and that the contributions of this year are to be used to pay pensions due this year, I want to say that railroad employees knowing the situation could not possibly support that, because in the present condition of the railroad industry, and with its future, they

would face the proposition that they would *now be paying out of their wages today and taking out of their earnings the amount necessary to pay for the immediate retirement of a large number of men and pay these heavy pensions year after year with a diminishing employment in the industry which would increase the burden on those men, until the time eventually came when the system would break down and the younger men who would pay it would get no benefit out of it.* (Record, pages 19 and 20.)

If you are going to set up an honest retirement-insurance program, if you are going to give the railroad employees of this country security in their old age, not a mirage, not a promise, but security, something they can depend upon, you have got to set up funds, the right of a man to a pension out of a fund that he has helped to create. Not only legally but practically you must do that job. (Record, page 20.)

Mr. Richberg, in answer to a question by Senator Wheeler, continued:

I should judge, according to the actuarial computations, that the Hatfield bill would cost a very much larger amount than the Wagner bill will. The claim which is being made, as I have heard, against the provisions of this bill is that they are not as liberal for the employees in some instances as the other bill. That being the case, it will cost more. You cannot get money except by collecting more. If you set up an unsound pension system, as I discussed this morning, a hand-to-mouth system, and you have no reserve at all * * * . It seems obvious to me that you will not have to pay the same amount of money next year if you are not beginning to establish your reserves. But of course that is an unsafe and unsound system. (Record, pages 35 and 36.)

Union Attitude on Bill a Reversal

The railroad brotherhood organizations have repeatedly taken the position that any pension bill should be a comprehensive and sound system of retirement insurance and pensions. It is amazing that the Railway Labor Executives Association through its representative, L. M. Eddy, vice-president of the Order of Railroad Telegraphers, could agree to the substitute for S.3231, especially in view of the announced and published statement upon old age pensions issued by the Railway Labor Executives Association (as authorized at its meeting of July 29, 1931, text to be found in "The Railroad Trainman," issue of September, 1931, Number 9, page 629.) This association adopted certain principles which should govern the drafting of a bill to provide old age security for railway employees. I cannot supply a more apt or forceful criticism of the substitute bill than to quote some of the principles from the said statement:

This retirement insurance should be paid for through compulsory contributions from employer and employee *fixed on a sound actuarial basis*, whereby the individual employee will acquire a vested right in trust funds, which can be maintained and enforced by him or his beneficiary just as other forms of insurance.

The insurance requirements of the federal act should be based on the advice of a competent actuary, and the contributions provided should be ample to furnish the protection promised. *It is indefensible to mislead legislators and railway employees with promises of insurance protection based on inadequate payments of premiums.* For example, the contributions required in the so-called Jones bill (S. 6196) are entirely insufficient to pay the "pensions" which the bill and its sponsors promise to railway employees. *The advocacy of such a measure is a fraud upon the employees and their friends in Congress because it promises to accomplish the impossible.* Some one must pay in a dollar for every dollar of insurance that can be paid out. (The Jones bill, S. 6196, 71st Congress, was the progenitor of the Hatfield-Keller bill.)

If a law, in order to provide uniform contributions, is to require the older railway men to pay one-fifth of the cost of their insurance and to require the younger men to pay five times the cost of their insurance, these facts should be clearly stated, so that these obligations (if they can be legally imposed) may be knowingly assumed. *But any plan where everybody insured pays much less than the average cost of the insurance promised must be the product of ignorance or deceit.*

The Railway Labor Executives Association will not approve any plan unless it is—

(a) Actuarially sound;
(b) Legally sound;
(c) Equitable in distribution of costs and benefits;
(d) So clear in its requirements that every employee will know what he will pay for and what he will get.

There will be no bill endorsed by the association or introduced in Congress with its approval, until these requirements have been met and until the memberships of the constituent organizations have had an opportunity to learn just how much insurance protection will actually be provided and how the cost will be distributed among those who are to be benefited.

Pensionable Employees Underestimated

On May 10 (calendar day May 11), 1934, Senator Brown, on behalf of the Committee on Interstate Commerce, submitted to the Senate a favorable report to accompany S.3231, with an amendment and the recommendation that the bill be passed. This report stated on page 4: "The probable maximum retirement will not exceed 50,000 employees the first year." This estimate was suggested at the conclusion of the hearing and after Mr. Eastman had made his statement that it would be unwise to press this legislation at the present time and was less than half of the number of employees that the proponents and opponents of the bill had testified would be retired the first year.

It is not only erroneous but inconsistent with the testimony of the actuaries and the information submitted to the Senate published in the Congressional record of March 29, 1934, in connection with S.3231. When S.3231 was introduced by Senators Hatfield and Wagner, Senator Hatfield, among other statements, said: "This bill will permit of the immediate retirement of 100,000 aged workers and the immediate employment of 100,000 unemployed railroad workers." (page 5813). These estimates were based on pensioning of superannuated employees and employees with thirty or more years of service, and the amendments made by the Committee on Interstate Commerce to bill S. 3231 contained no provision which would justify a reduction in the estimated number of employees to be retired the first year. Per contra, one change will increase the number to be pensioned.

A survey, made by Willian Breiby, an actuary employed by the Association of Railway Executives, and who testified at the hearings conducted by the subcommittee of the Senate Interstate Commerce Committee in January, 1933 and April, 1934, shows that 147,300 employees would be eligible, upon the enactment of the substitute bill, to retire and receive pensions ranging upward from a minimum of 20 per cent of the so-called average compensation. The payments to them during the first year would aggregate $121,375,000 and the gross worth, i.e., the sum of money necessary to pay these initial grants to termination is estimated at $1,645,500,000. It is clearly evident that annual pension payments will materially increase from year to year. The yearly administrative expense can be expected to average over $5,000,000.

In addition, if the carriers are to continue to pay present pensions, there will be an additional sum required of the carriers in the neighborhood of $36,000,000 during the first year. It is evident that if this pension bill is enacted by Congress, the present pension plans of the railroads as to future retirements will be discontinued. If the carriers should continue to pay the existing pensions to termination, the aggregate cost would be approximately $300,000,000. The foregoing estimates of costs do not include any provision for retirements on account of employees disabled, it evidently being the intent to leave such burden to the carriers.

Neither do the foregoing estimates reflect the cost arising from the application of Section 6, which provides pensions for employees who left the service at or

after 70 without pension and also requires the "rating up" of superannuated retired employees where they are now receiving less than the benefits proposed in the substitute bill.

Where Will Railways Get 120 Millions?

A further evidence of the unsoundness of the proposals of the bill is found in the fact that contributions to be made at the rate of 2 per cent of employees compensation and twice that sum by the carriers as measured by the 1933 total employees' compensation of Class I carriers, i.e., $1,404,000,000 would be inadequate to meet benefits proposed for the employees to be retired in the initial year. The contributions on the basis indicated would be about $27,518,400 by the employees, and $55,036,800 by the carriers, total $82,555,200, indicating a deficit of $38,819,800 the first year. Mr. Breiby estimates that the first year's payments will aggregate $121,375,000, of which the carriers' proportion would be $80,916,667, and the question naturally arises, from what source are the railroads to secure this sum plus $36,000,000 to cover payments to present pensioners and the carriers' proportion of the administration expense—$3,333,333, or a total of $120,250,000 the first year the Act becomes operative.

The above clearly indicates that the proposed benefits of 2 per cent of the average monthly employees earnings for each year of service, whether rendered in the past or the future, are grossly excessive. Such over-liberal benefits would impose an initial burden on the employees as well as the carriers. The substitute bill provides for initial contributions of the carrier and the employee a total of 6 per cent of the payrolls, and, as we have shown, this percentage would, by no means, provide sufficient money to make even the first year's payments.

In the statement made by Joseph B. Eastman, Federal Co-ordinator of Transportation, at the hearing before the sub-committee of the Senate Interstate Commerce Committee on April 26, 1934, he said:

> The financial condition of the railroads and their employees absolutely requires as a prerequisite to the passage of legislation that the cost element be investigated as thoroughly as possible. The necessity for reasonably accurate accounting requires that the current accounts show as nearly as possible the liabilities incurred for pensions by reason of service rendered during the accounting period.

In dealing with the cost question, Mr. Eastman referred to the employment survey that he is making with funds contributed by the Civil Works Administration, and stated that while he had secured the employment history of 400,000 railway employees and 110,000 pensioners, from carrier records, the compilation of the employment survey has not yet been completed and further stated:

> I cannot avoid the conclusion that the information now at hand does not permit of wise and well-considered legislation on the subject of pensions. We are, however, obtaining the necessary basic facts, so far as they are available and shall prosecute our study of this matter with all possible expedition.

JACK FRYE, VICE-PRESIDENT OF T. W. A., flying in a Northrop Gamma monoplane, with the help of a 50-mile-an-hour wind, brought mail and express matter into Newark, N. J., on Sunday evening, May 13, in 11 hrs. 31 min., from Los Angeles, Cal. He carried 355 lb. of mail and 85 lb. of express matter. He left Los Angeles at 2 a.m. Pacific time and arrived in Newark at 4:31 p.m. Eastern time. The only stop was one of 10 minutes, at Kansas City, for fuel. The distance is calculated at 2,609 miles, making an average rate of 227 miles an hour. To avoid storms the aviator at times rose to a height of 21,000 feet.

An Outside View of Railway Wages and Rates*

THE agreement between railway company officials and the officials of the employee brotherhoods to restore the 10 per cent wage reduction which went into effect on February 1, 1932, obviously diminishes the probability of any general downward revision of freight charges in the near future, as an aid to business recovery. Rail wages were raised during the war and years following as a necessary accompaniment of rising living costs, which at the peak in 1920 were calculated by the Bureau of Labor Statistics to be about 116 per cent above the 1913 level. The adoption of the eight-hour day in response to the demands of the employees caused a further increase in hourly wages in order that aggregate weekly and monthly wages might remain the same as under the ten-hour day, with the result that increases in hourly wages after 1913 amounted, on the average for all classes of railroad employees, to more than 150 per cent. The railroads met this increase in their operating costs to a great extent by improvements in operating methods and equipment, but the new equipment involved extensive additional investments of capital, which of course had the effect of partially cancelling the gains by increasing the annual capital charges. However, by reason of the economies thus accomplished railway charges upon traffic were not increased in proportion to the increase of rail wage rates.

Freight Rates on Farm Products, Carload Lots, Chicago to New York and Comparative Prices in Chicago Wholesale Markets, 1913-1932

Commodity and Measure		Wholesale Prices Year 1913	July, 1932	Per Cent Change	Freight Rates per 100 Pounds 1913	1932	Per Cent Change
Cattle	cwt.	$8.507	$8.606	+1.2	$.28	$.53	+89
Hogs	cwt.	8.365	4.856	−42	.30	.61	+103
Sheep	cwt.	7.794	5.906	−24	.30	.665	+122
Wheat	bu.	.986	.484	−51	.212	.38	+79
Corn	bu.	.625	.319	−49	.212	.38	+79
Eggs	doz.	.226	.133	−41	.65	.965	+48
Dressed Poultry	lb.	.145	.156	+8	.50	.965	+93
Cheese	lb.	.142	.112	−21	.50	.78	+56
Butter	lb.	.310	.173	−44	.75	.965	+29
Meats (beef)	lb.	.130	.142	+9	.45	.81	+80
Milk (a)	cwt.	1.590	1.060	−33	.372	.529	+42
Cotton (b)	lb.	.128	.058	−55	.575	.86	+50

(a) Price paid to farmers in upstate New York; freight rates to New York from 201-210 mile zone. (b) Price in New York for middling, upland; freight rates from Memphis, Tenn., to Fall River, Mass.

Note: Since the above table was printed the plus signs before the cattle, beef and poultry prices of 1932 have been eliminated. None of the commodities named is now above the 1913 level and average of all the prices is below the average of 1932.

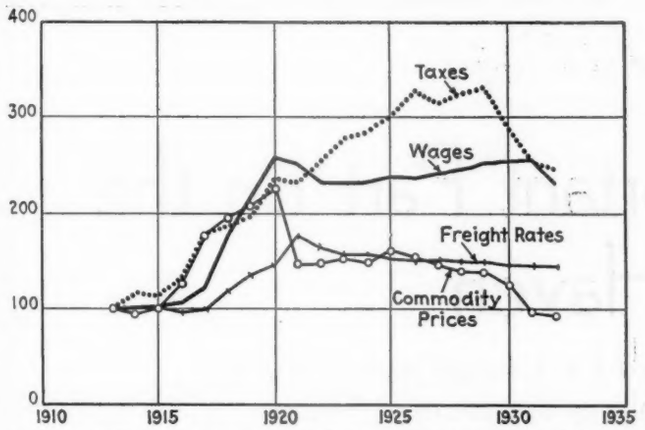
Meantime, after 1929, the general level of commodity prices and living costs, which had been the basis of all the wage increases after 1913, was declining rapidly. When the 10 per cent reduction in railway wages went into effect on February 1, 1932, the cost of living already had been reduced much more than that. It was 116 per cent above the 1913 level in 1920, but only 71 per cent above in 1929, 46 per cent above in December, 1931, 36 per cent above in June, 1932, and in June, 1933, had fallen to only 28 per cent above the 1913 level. Thus the basis for the increase of 150 per cent in railroad wages had largely disappeared. By reason of this decline in living costs the railroad employees even in 1929 were enjoying a very large increase in real wages over both 1913 and 1920, and from 1929 to 1932 the wages of those who had employment were steadily increasing in purchasing power, which illustrates the meaning of the

* From the monthly Economic Bulletin of the National City Bank, New York.

term "real wages." Despite the reduction of money wages in 1932, real wages were higher in 1932 than in 1931, and higher in 1933 than in 1932. In short, rail workers who were fortunate enough to have full time employment were enjoying a constant increase of real wages from 1929 down to a few months ago, when living costs began to rise against them.

We reproduce herewith a chart which appeared in the October, 1932, number of this publication,† showing the relations between commodity prices, railroad wages and taxes and freight rates from 1913 to 1932 and also from the same issue a table giving a list of twelve important agricultural products and showing the freight charges thereon per 100 lb. between Chicago and New York in 1913 and 1932, together with wholesale market quotations on these products in both years.

It should be said in this connection that owing to the general rise of wages throughout the industries the total of railway operating costs increased nearly in correspondence with railway wage costs. That the companies could not meet these costs without an increase of income is evident from the fact that in 1932 companies having 75 per cent of the total mileage were unable to meet their fixed charges from earnings, although many of them



Index of Railroad Wages, Freight Rates, Railroad Taxes and General Prices Based on the 1913 Average

were able to do so with the aid of borrowed money, largely supplied by the Reconstruction Finance Corporation. This cannot be regarded as a permanent solution of the railway problem. The chart and table show the higher railroad operating costs and charges, together with falling prices for agricultural products.

Even now when the pledge is given to restore rail wages to 150 per cent above the 1913 level the Department of Agriculture index number for agricultural prices is 24 per cent below the 1913 level, and of course the railroad employees as consumers have the benefit of these prices. This illustrates vividly Secretary Wallace's argument for restoration of the pre-war "parity" between what the farmer produces and what he must buy. Freight charges enter into all prices and into many important products they enter several times. An important producer of pig iron has calculated that 63 per cent of the cost of it at the furnace is for transportation of the materials. When pig iron or steel is transported to a manufacturer of agricultural implements another charge is incurred, and when the implements are re-distributed, one or more additional charges are incurred, all of which must enter into the price of the implements, and so of other goods.

Obviously neither the railroad companies nor the shippers or consumers of the goods which comprise the bulk of rail traffic are now in position to pay higher rail wages and from what other source are they to be paid? This rail case illustrates very clearly the fallacy of the theory that aggregate purchasing power can be increased by increasing costs which must be added to the prices of the goods or services produced. Moreover, it illustrates the general state of disorder in economic relations which has been the cause of the depression and now protracts it.

Why Unemployment and Low Prices Persist

Every group in the economic system pays for what it buys from the other members of the system, with its own products and services. The system virtually is an organization for exchanging services, and prosperity depends upon such balanced relations in production and trade as will enable the markets to clear themselves without troublesome surpluses and all of the products to enter consumption. All of the disorders of the system, such as overproduction, underconsumption, abnormally low prices and wages, unemployment, etc., result from unbalanced relations.

The railroad employees stress the fact that 40 per cent or more of their number are out of employment, which of course is a distressing condition, but a glance at the chart and table affords an ample explanation. The change in relations between transportation costs and the values of the primary products which comprise the bulk of the traffic has been one of the principal causes of the decline in trade which in turn has resulted in the state of unemployment on the railroads and in the industries. And whatever devices may be tried, it is safe to say that the situation will not be remedied until the people are able to buy each other's products with their own.

† The monthly bulletin of the National City Bank.

Claim Agents Hold Annual Convention

(*Continued from page 768*)

photographs and the liability of persons running into the sides of trains.

Mr. Fauser defined economy as the practical administration of affairs or resources which no business can escape. "Judicially defined," he said, "economy means frugality or prudent economy, not parsimony. We can readily subscribe to both definitions, especially the latter; it is only temporary economy when our matters are handled with minimum expenditure. There are, however, many methods that tend to economy, heretofore thought unwise and improper, which, under present conditions, bring about the desired end and with it the attendant lessened cost to the claim department of a railroad. One is the handling of certain types of claims by correspondence.

"We all have matters from time to time which, on their face, seem to be of a trivial nature and it is a moot question what to do concerning them. I am of the firm conclusion that to follow up these matters or to make an investigation in most instances invites a claim and very often litigation, whereas by making the book entry and letting the matter lie, seldom, if ever, is the affair brought up. I believe the better plan to follow is to wait until the claimant makes a move, and it has been my experience that in most such cases the matter

(*Continued on page 787*)

Motor Transport Section

The Line-Up of N. E. T. Co. Equipment at Providence, One of the Busiest Centers of Collection and Distribution in the Co-ordinated Rail-Highway Freight Service of the New Haven

Trucks Play Important Part on the New Haven

Enable railway to provide improved l. c. l. freight service through co-ordination of rail and highway operations—Also earn profit on own account

FEW railways have to face competition as intense yet as diversified as that with which the New York, New Haven & Hartford and its subsidiary, the New England Steamship Company, have to contend. Especially severe has been the competition for freight traffic by motor truck transportation, largely of an interstate character and consequently unrestrained by regulation. To meet this competitive situation and especially to meet and overcome the competition of highway carriers, the New Haven for nearly five years has been a leading operator of motor trucks in freight service.

Through its highway subsidiary, the New England Transportation Company, the New Haven is currently the largest railway operator of its own directly controlled motor trucks. The transportation company's truck lines parallel closely the entire 2,000 miles of railway lines of its parent company. Its trucks operate in close co-ordination with railway and steamboat service and in addition, carry on a general contract trucking business on their own account.

Constant Increase in Revenues

That the plan of operation of motor trucks by the New England Transportation Company has been well advised is indicated by the outstanding revenue record of the company. Each year since 1929, revenues from

New England Transportation Company Motor Trucks Operate on Highways Paralleling the Entire New Haven Railway System

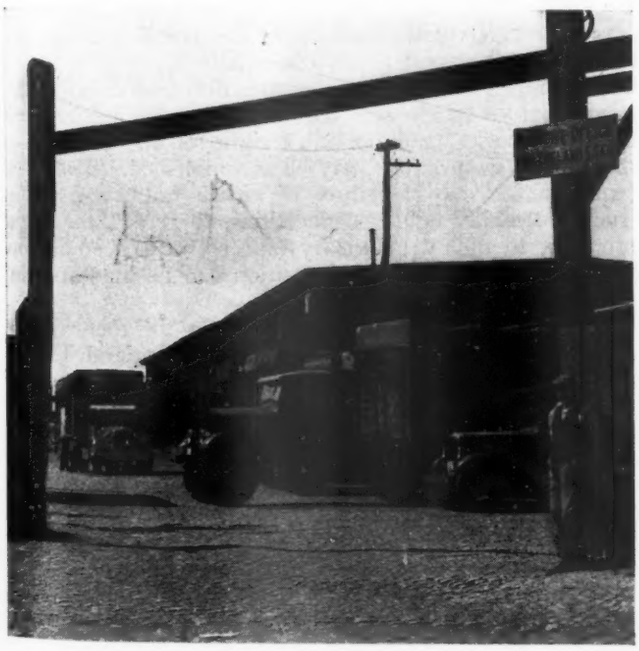
New England's Newest Truck Equipment—Auto-Carrying Tractor-Trailers

trucking operations have increased. In 1929, truck operations yielded a gross revenue of $101,442. In 1930, this figure increased to $520,067. As the depression deepened, the business of the New Haven's motor trucks steadily increased, with the result that in 1931, gross revenues from truck operations were $715,474. In 1932, the figure increased to $806,736, while in 1933, gross revenues from truck operations reached a new peak of $833,859. While published reports of the New Haven do not divide operating expenses as between motor coach and motor truck operation, preventing the publication of statistics of net operating income from truck operations, it is well known that the truck operations of the transportation company have consistently been carried on at a profit.

Purpose of Truck Operations

When the New Haven began motor truck operation on July 1, 1929, the primary motive was to provide better service to the public. It had been found that the railway service, particularly in the handling of merchandise traffic to and from stations on branch lines and those of light traffic density, were not as rapid as the public required. On some lines, furthermore, the handling of l.c.l. freight in local freight trains was more expensive than the volume of business justified. To meet this situation, l.c.l. freight, both inbound and outbound, has been diverted to the transportation company's trucks, the railroad continuing to handle the carload freight. This has had the effect of reducing materially the operation of way freight and peddler car trains. Trucks are also used to handle l.c.l. freight between central points and important local stations on busy main lines, thus relieving such main lines of local l.c.l. freight trains.

This trucking service is performed in lieu of rail service at the railroad's published rates, the New Haven hiring the New England Transportation Company to provide this service. Incidental to the operation of trucks for the New Haven, the New England Transportation Company engages in a general trucking business for its own account.



Truck Service is Co-ordinated with Steamship as Well as Railway Operations

Fast Service for Merchandise

Out of this co-ordinated rail and truck service has grown the "Accept Today—Deliver Tomorrow" slogan of the New Haven and the New England Transportation Company traffic departments. This slogan means that overnight service for merchandise can be secured between practically all points on the New Haven. With very few exceptions, a shipper can get his shipments to their destinations in New Haven territory between the afternoon of one day and the early morning of the following day, a service which would be impossible or impracticable on account of the expense except by the use of motor trucks and except for the efficient system of truck and train co-ordination which the New Haven and its subsidiary have in effect.

Under this system, there are 30 concentration and distribution points, between which overnight freight trains are operated. These include such cities as Stamford, Conn., Bridgeport, Waterbury, New Haven, Hartford, Danbury, Putnam, New London, Providence, R. I., Worcester, Mass., Springfield and Boston. The cities and towns situated along the lines of the New Haven, within the zones of which these concentration and distribution points are the centers, are served each day by motor trucks of the New England Transportation

Sixty Per Cent of the New England Transportation Company's Tonnage is Railroad Freight, Moved by Truck from Station to Station

The N. E. T. Co.'s Fleet of Equipment Includes the Largest Tractors and Semi-Trailers as Well as Light Trucks and Combinations.

Company, operating out of and into the concentration stations.

Thus, Bridgeport, to cite one example, is the point of concentration and distribution for highway trucks operating to and from 67 stations in the Bridgeport zone. Trucks operating on six runs out of and six runs into Bridgeport serve all these points twice a day, operating out of Bridgeport in the early morning and returning to Bridgeport in the late afternoon. One run is from Bridgeport to Wilton, via Danbury, with departure from Bridgeport at 5:30 a. m., arrival at Wilton at 12:45 p. m., leaving Wilton at 1 p. m. and returning to Bridgeport at 4:45 p. m. Nine intermediate stops are made on the outbound trip from Bridgeport, while seven intermediate stops are made on the return trip. The morning run is made largely for the purpose of delivering merchandise freight which has come into Bridgeport by rail on night trains, while the return trip is for the pick-up of merchandise at local points for transfer to night trains at Bridgeport. The same plan is in effect throughout the territory of the New Haven and it works with virtually perfect regularity.

The New Haven emphasizes its "Accept Today—Deliver Tomorrow" merchandise freight service and employees of both the railway and the transportation company have been carefully trained to insure that it will work smoothly. Special emphasis is placed on strict observance of the details of freight car and truck loading orders, which are published in special bulletins; to the prompt movement of cars and trucks engaged in handling merchandise; to the prompt placing of l.c.l. cars for transfer from car to car, from car to truck or from truck to car; to keeping all lot shipments intact both in cars and on trucks so that their movement may be made as a unit; and to the segregation of all truck freight in cars for preferential handling in the transfer from car to truck at the point of distribution.

The agents at points of concentration and distribution keep in close touch with the movement of freight cars or motor trucks handling l.c.l. freight for one another so that proper connections may be accomplished. They are required, in case of failure of either railway cars or trucks to make regular connections, to report the facts promptly to their supervisory officers for special action so that the best possible disposition can be made of the delayed freight.

The handling of merchandise freight for the railway comprises the principal job of the New England Transportation Company's motor trucks. Of the 40,000 tons of freight per month currently handled, approximately 60 per cent is railroad and steamboat freight. The other 40 per cent represents freight which the transportation company secures on its own account as a contract truck operator. As a contract trucker, the transportation company is able to compete directly, on a basis of price as well as service, with its highway competitors. Every effort is made, of course, to secure traffic for handling by rail, boat, or by rail and truck at rates provided in New Haven tariffs.

In many instances—probably in most instances—the New Haven, in offering co-ordinated rail and truck

(*Continued on page 787*)

Thousands of Motor Trucks are Used by the Pennsylvania to Collect and Deliver Merchandise

Pick-Up and Delivery Service Proving Worth

Pennsylvania and Erie report revenues from new business far exceeding entire trucking expense—Operating efficiency improved

THE collection and delivery service for l.c.l. merchandise freight, inaugurated by several eastern railways on December 1, 1933, is already proving its importance as one means of meeting motor truck competition, in recovering lost traffic and in attracting new traffic for the railways. Compilation of the revenues from new traffic and the expenses of providing the motor truck collection and delivery service have indicated that within a short time after the new service was established it was substantially more than paying for itself.

The increasing use of the service by shippers has been reported in previous issues of the *Railway Age*. On the Pennsylvania, which furnishes collection and delivery service on a scale larger than that of any other railway, each month has seen a greater proportion of l.c.l. shipments handled under the pick-up and delivery tariff. In the first month, December, collection and delivery shipments accounted for 13 per cent of the total l.c.l. waybills issued on the Pennsylvania. In January, the proportion rose to over 21 per cent, with 76,484 shipments. In February, the total number of shipments under the collection and delivery tariff increased to 90,123, or more than 25 per cent of all l.c.l. shipments, while in March, the total number of shipments upon which collection and delivery was given was 120,000, or nearly 50 per cent of all l.c.l. freight shipments on the railway

Likewise, on the Erie, another railway which adopted collection and delivery service on December 1, the popularity of the service increased as shippers became more familiar with it. In the second month of the service, the number of shipments handled under the collection and delivery tariff represented an increase over December of 84.9 per cent, and the average weight of shipments handled per day in January was 82.1 per cent greater than the average per day of the preceding month. The increase in the tonnage of l.c.l. shipments handled by the Erie in January, as compared with December, was 88 per cent, and large increases have also been made in the ensuing months.

The citation of the increasing use of the service does not, however, tell the whole story. Railroad officers are more interested in the answer to this question: "How much is the service costing and how much money is it bringing in?"

New Revenue Far More Than Expense

The Pennsylvania has just made available for the first time information as to the tonnage of traffic recovered by the collection and delivery service, the revenues from this traffic and the cost of operating the motor trucks involved in the pick-up and delivery work. The substance of the Pennsylvania announcement is that more than $400,000 in new business, a steadily mounting volume of traffic, and material economies in railway operation have resulted from the introduction of collection and delivery service for l.c.l. freight on the Pennsylvania. The new revenue obtained through the introduction of the service on the Pennsylvania is more than twice the additional cost to the railway of providing trucks for pick-up and delivery at store doors. In March, for example, the railway secured 9,000 tons of new merchandise freight in storedoor service—business which

A 40 Per Cent Increase in the Average Load per Merchandise Freight Car Has Been Made

before had not moved on the railway. This business gave the railway almost $120,000 in additional revenue. In other words, this is the amount that the collection and delivery service brought the railway during March. Offsetting that, of course, was the money spent by the railway for drayage service. This was $50,000, or less than half the amount of the additional revenue.

On the Erie, also, the collection and delivery service has proved profitable. The service is now available at more than 200 Erie stations and the revenue from the new business secured is several times greater than the cost to the Erie of furnishing motor truck service to handle pick-up and delivery not only of new business but also of business previously handled by the railway only in station-to-station service.

Load Per Car Increased 40 Per Cent

In addition to the increased freight revenues attracted by the new service, the railways are finding that it also has corollary advantages. Largely due to the introduction of the service, which makes possible greater centralization of traffic in the larger areas and more concentrated loading arrangements, the Pennsylvania, since last December, has increased the average load for each car of merchandise freight by almost 40 per cent. Still greater concentration and centralization of l.c.l. traffic, resulting from the broadened use of pick-up and delivery service, will enable the Pennsylvania further to improve its average load per car and its accelerated movement of the freight. In the opinion of the Pennsylvania, the full advantages and economies of collection and delivery service, both to the public and to the railways, will not be realized until it is generally adopted and the practices and methods of handling have been standardized and made uniform for all the railways.

Shippers Have Responded to Extension of Railway Service to Their Store Doors

Undoubtedly, m· s .all part of the success of the Pennsylvania's colle· on and delivery service is due to the manner in which it has been advertised and administered from the start. Extensive newspaper and magazine advertisin informed shippers of the availability of the new servi e before it was established as well as afterward. Furthermore, to insure the smooth working of the plan in operation, meetings were held at various points throughout Pennsylvania territory to familiarize all concerned with the features involved. These meetings were attended by truckmen with whom the Pennsylvania contracts for motor truck collection and delivery service, by railway agents, by supervisory officers and by shippers. At these meetings, it was constantly emphasized that collection and delivery is not something to be confused about but is simply a natural part of railway service. This idea was pounded home to such good effect that collection and delivery operations have been carried on smoothly ever since the inception of the service. The Pennsylvania and the Erie have likewise benefited from the co-operation which they have received from the trucking companies with which they contract for motor truck service. On the Pennsylvania alone, 1,500 individual truckers and trucking companies are employed to provide collection and delivery service. The efforts on the part of the managements of the railways to secure the interest and active assistance in traffic development of these truckmen have been highly successful.

Shippers Like New Service

That shippers have responded favorably to the collection and delivery idea is indicated not only by the increased traffic handled by the railway, but also by the replies of Pennsylvania patrons to a questionnaire distributed among them by the Pennsylvania to secure the benefit of their reactions to the new service. Of the many replies received, 90 per cent indicated the feeling of shippers that railroad transportation, augmented by pick-up and delivery service, is a constructive and necessary element in meeting the transportation needs of the business community. Eighty per cent of the shippers replying to the questionnaire had already made use of the collection and delivery service, and 60 per cent said that in its present form it fully meets their transportation requirements. More than 40 per cent of the business houses replying said that the adoption of the new service had resulted in a definite increase in the volume of their traffic moving over the Pennsylvania.

There is recognition, however, that the service as now provided is not in its final and ideal form. Experience has shown the wisdom of modifying certain of the earlier provisions of the collection and delivery tariff. One of the first of these modifications was an amendment to provide that the consignee may order delivery if the shipper fails to do so.

Obstacles Being Overcome

Inquiry among its agents by the Erie brought out a number of reasons why shippers or receivers do not now wish to take advantage of collection and delivery service. Some of these are as follows: Shippers have trucking contracts with local truckers, which are still in force; shippers and receivers are inclined to favor local truckers other than railway draymen on account of long associa-

tions; shippers are using their own trucks; truck rates on short-haul traffic are lower than railway rates; trucks furnish a speedier service on short-haul traffic; there is objection to the quotation of the 25-cent minimum charge per collection or delivery to or from points on lines not party to the tariff; carloading companies' rates are lower than railway rates; the free zone is not wide enough; there is objection to the non-acceptance of l.c.l. traffic taking commodity rates; there is objection to the non-acceptance of order-notify shipments; trucking companies allow greater credit privileges.

Some of these objections can be removed only over a period of time. Such, for example, are the objections of shippers to railway collection and delivery on account of the fact that they have their own trucks or have contracts with other trucking companies. Others of the objections are expected to be taken care of in a supplement to the collection and delivery tariff to be issued shortly.

The viewpoint of the railways toward their collection and delivery service is expressed by the Pennsylvania as follows: "While still in the experimental stage, the results obtained thus far indicate the need and demand for such a service and its almost unlimited possibilities. Already a number of changes have been made in our arrangements to meet certain situations, and the service will be revamped and reshaped as time goes on until it perfectly takes care of patrons' requirements. The important thing is that a good start has been made in meeting modern trends in business and in co-ordinating rail and highway transport in a form best calculated to serve the public interest."

Trucks Play Important Part on the New Haven

(*Continued from page 784*)

transportation, can give just as fast service as its highway competitors. But where competitive trucks cut below the railway rates, the transportation company can step in and bid for the business on a rate as well as on a service basis. It represents a sort of last resort for the New Haven and as such has been highly successful in retaining for the parent railway, freight revenues which otherwise would go to competitive companies.

Although the New Haven does not offer storedoor collection and delivery service on its railway merchandise freight traffic, trucks operating in the co-ordinated service running only from station to station, the New England Transportation Company does give pick-up and delivery service at the storedoor on its contract freight. This has been brought about by competitive reasons.

Trucks running in the co-ordinated rail-truck service are all definitely scheduled and operate to a large degree in a routine manner. The contract trucking activities of the company, however, change from day to day and thus require the close and constant attention of the freight traffic manager, the superintendents and the dispatchers. With close co-operation between traffic and operating officers, the transportation company is able to adhere strictly to its rule that it will not accept contract business unless it knows that equipment is available to handle it without deadheading and that the business can be handled at a profit.

At the present time the fleet of trucking equipment owned by the New England Transportation Company consists of 89 motor trucks of varying capacities, 58 tractors and 84 semi-trailers. The most recent addition to the New England Transportation Company truck fleet is a group of five tractors and auto-carrying trailers which are now being used for the delivery of automobiles to dealers in New Haven territory, in co-ordination with boats of the New England Steamship Company, another New Haven subsidiary. The products of 12 truck, tractor and trailer manufacturers are included in the company's freight equipment. These are distributed among the principal operating centers and, to simplify maintenance, the trucks and tractors of one manufacturer are concentrated at one station.

The value of the truck operations of the New England Transportation Company to the New Haven is difficult to estimate. The profits which have resulted from the truck operations represent probably only a small part of this value. Substantially greater is the value to the railroad of the saving in operating expenses which has resulted from the substitution of motor trucks for branch line and main line peddler freight trains. Finally, there is the value to the railroad of the freight which it has continued to handle, in the face of competition, on account of the improved service resulting from its co-ordination of train and truck operations.

Claim Agents Hold Annual Convention

(*Continued from page 781*)

can be disposed of just as easily after such a move as if handled at once.

"It has been my policy also not to go after matters off line, except in rare instances. During the past 3½ years only one case of this kind came to light and I dare say that a settlement was effected just as economically after the suit was filed as it would have been had we traveled several hundred miles off our line to accomplish this end.

"No business can escape a change if it is to prosper and this is forcibly impressed upon us in our present need for prompt investigation. In years gone by, things were not done in such a rush. We were not confronted with the ambulance chaser, so there was no particular need to do anything until we happened that way, and if we didn't make the train today, we could make it tomorrow or some other day. However, this method can no longer be followed without disastrous results. It is of the greatest importance to get to the scene of an accident at once.

"We are often asked what effect the depression has had on the cost of settlements. Based upon the opinion of others with whom I have talked, together with my own experience, it has had a considerable effect. The economic situation has brought people to their senses. They are back to a more rational trend and no longer think in terms of ten thousands. Because of lack of business, employment has been cut to a minimum and this has caused a corresponding reduction in injuries. Summing up the subject, the most economical result can be attained by the acceptance of the new order of things, for affairs cannot be handled as they were 10 or even 5 years ago. We must have an efficient and alert field force which is abreast of the times to make a prompt and thorough investigation of claims and above all, one which will make an honest and fair deal with those who have the misfortune to become involved."

NEWS

Unification Needed in Canada Beatty Insists

Predicts that co-operation of two systems will fail to produce needed savings

Reiterating his contention that a solution of Canada's railway problem can best be attained by unification for administration purposes of the two major systems under private management, President Beatty of the Canadian Pacific in an address on May 23 at Montreal before the Canadian Political Science Association analyzed in detail the financial difficulties which have arisen in connection with the development of Canada's transportation system.

"The railway debt of Canada at the end of 1933, incurred for the Candian National Railways," he said, "was $2,895,799,134, and it is increasing daily. It has reached intolerable dimensions, and must not only be controlled but reduced. It constitutes the greatest obstacle to the refunding of our national, provincial and municipal obligations, which refunding is so necessary if we are to place our financial house in order, and keep taxation within endurable limits.

"It is not a phantom debt which can be disposed of by bookkeeping entries, but an undischarged mortgage on the industry and the resources of the country. The business property which we have to show for the expenditure is not self-sustaining. The proposal to write off a proportion of the debt has the support of certain publicists whose record of counsel on railway problems, up to the present, consists of the following:

(1) Unrelenting opposition to the construction of the Canadian Pacific Railway.
(2) Enthusiastic support of the construction of the G. T. P. and Transcontinental Railways.
(3) Equally enthusiastic support of the Canadian Northern enterprise.
(4) Support of the acquisition of all major railways, save that of the Canadian Pacific by the government.
(5) Support of the policy of unrestrained competition offered by the Government Railways to its competitor during the last ten years.
(6) The maintenance of the duplication, and, in places, triplication of facilities we now enjoy whether or not bankruptcy is just around the corner.

They now propose to add

(7) Support of an endeavour to wipe out, by book entries, inescapable loss resulting from policies previously advocated by them, and to be parties to a calculated deception of the Canadian taxpayer as to the extent of the yearly contribution he must make to meet railway losses.

"After a survey of the whole field, the Royal Commission on Railways came to the conclusion that conditions, as they were, could not continue if the nation was to remain solvent, and cast about for a remedy. Although it was stated that some members of the Commission would have preferred a solution which would have taken the government out of the railway business, plans for amalgamation, or unification for administrative purposes only, were rejected on grounds which seem to me to have been insufficient. A change in the form of administration of the Canadian National, and the imposition of a statutory duty on both railways to pursue measures of co-operation, were recommended. These recommendations were accepted in the main by Parliament, and the necessary legislation was passed.

"The duty imposed on the two companies by the Act was to consider and put into effect any measures of co-operation which could be adopted without sacrifice of the vital interests of either. Investigation and negotiations have been pursued in an earnest effort to effect the greatest possible savings, but it is becoming more and more apparent that the field of accomplishment is strictly limited. Competition and co-operation are, in the large sense, irreconcilable, and in many cases examined it is difficult to strike a balance which is fair to both companies. Up to the present the measures which have been put into effect involve an estimated annual joint saving of a million and a quarter dollars. A number of others are under consideration, the saving from which cannot yet be estimated.

"The company with which I am associated desires to give the fullest effect to the policy enjoined. There are two reasons why such action on our part might be expected. Firstly, the Canadian Pacific is anxious to save money, and, if there is money to be saved, we will co-operate as far as we wisely may. Secondly, at the best, we cannot anticipate that the results will bring any substantial relief to our shareholders or the taxpayer who must pay the bills of the Canadian National, and when the insufficiency of co-operation is clearly established, we do not propose to leave the Canadian Pacific open to the charge that, by its attitude, it did anything to wreck the plan.

"The railway structure of Canada is unsound, and with the debt of the government system already of monumental proportions and pyramiding as it is year by year, more sweeping measures are necessary. With the experience which we had in the good years previous to 1929, it is useless to suggest that a return to normal conditions will solve the problem for us. The greatest annual revenue which the Canadian National ever enjoyed was $304,591,268, in 1928, from which it saved $44,-

(*Continued on page 793*)

Need Renewal of Private Initiative and Investment

Problems of all industry have become similar to railroad problems, says S. O. Dunn

"Because of developments during the depression and, especially, during the last year, there is more similarity and a closer relationship between the problems of the railroads and those of other industries than there ever was before since the beginning of effective regulation of railroads," said Samuel O. Dunn, chairman of the Simmons-Boardman Publishing Company and editor of the *Railway Age*, in an address before the Executives' Club of Chicago on May 18.

"All the major industries of the country are now confronted, as the railroads have been for many years, with government regulation, and, consequently, with questions as to how comprehensive and detailed government supervision of their operations and price fixing shall be; to what extent their financing and profits shall be controlled; to how much direct and indirect government competition they shall be subjected; and to what degree their conditions of employment and the wages they pay shall be determined by labor unions aided by government. Recent developments having made the railroad problem no longer unique, but merely one of numerous similar problems, there seems promise of more sympathetic and understanding consideration of it by the numerous business men, large and small, who have heretofore regarded it as concerning them only because of their desire to have the power of government over the railroads used for their especial benefit.

"There is a recurrence of talk to the effect that if certain things are not done the railways cannot escape government ownership. But they now face much the same conditions, problems and government policies as other industries, and if they are forced into government ownership the same influences will also force so many other industries into it that we shall virtually or actually have state socialism.

"With regard to the immediate problems of recovery, the railways and other industries are interdependent. The railroads are principally dependent upon the recovery of other industries for the restoration of their traffic and earning capacity, but other industries and, especially, the durable goods industries, in which depression is still most pronounced, are also largely dependent for their recovery upon the restoration of the earning, employing and

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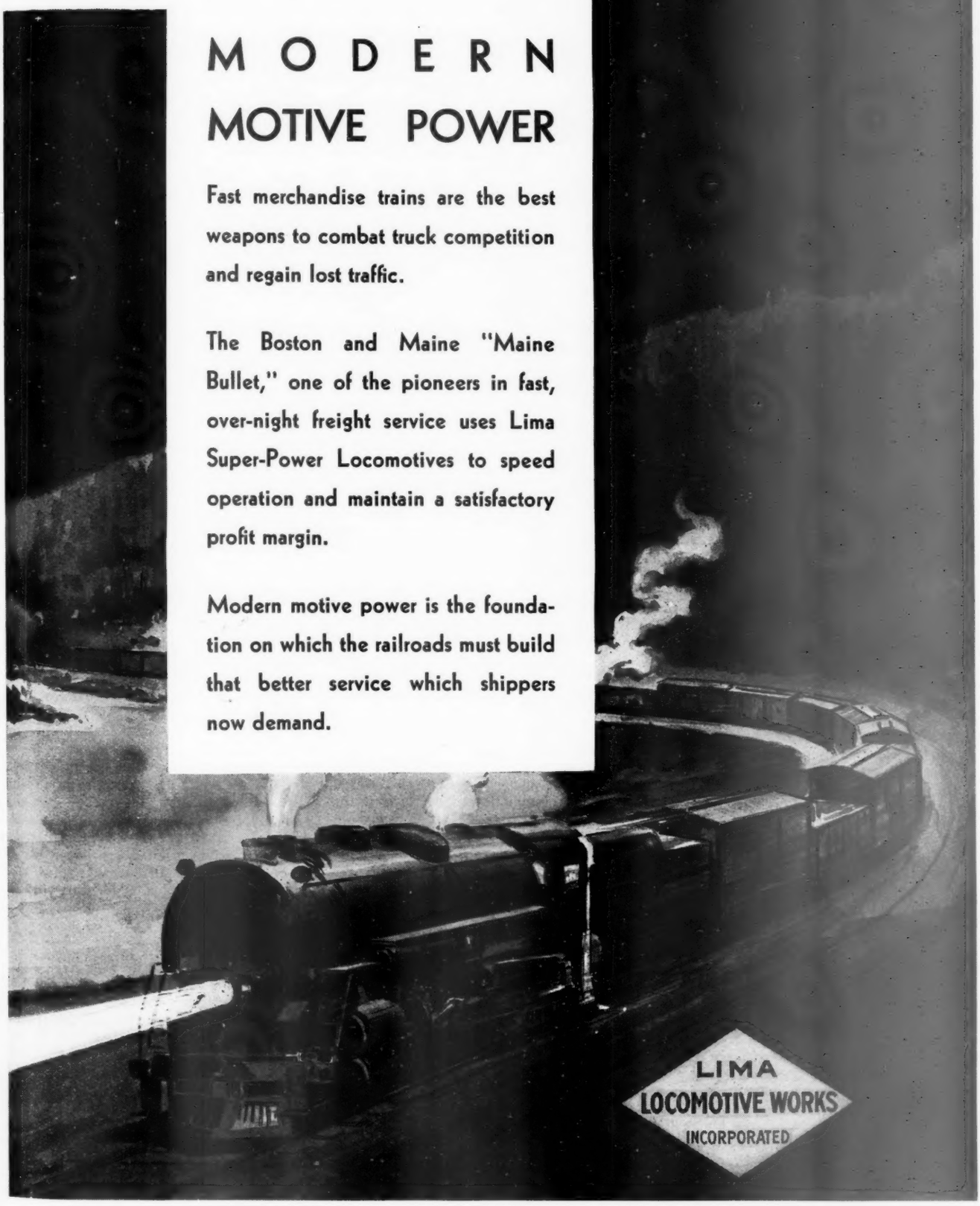
HIGH SPEED FREIGHT SERVICE *Needs*



MODERN MOTIVE POWER

Fast merchandise trains are the best weapons to combat truck competition and regain lost traffic.

The Boston and Maine "Maine Bullet," one of the pioneers in fast, over-night freight service uses Lima Super-Power Locomotives to speed operation and maintain a satisfactory profit margin.

Modern motive power is the foundation on which the railroads must build that better service which shippers now demand.

LIMA
LOCOMOTIVE WORKS
INCORPORATED

the purchasing capacity of the railroads.

"Typical of many current proposals for so-called 'reform' is one made recently that the indebtedness and fixed charges of the railroads shall be 'scaled down' to enable them to stabilize employment and wages, it being asserted that their fixed charges have increased excessively since 1916. The facts are that less than one-fourth of the $8,000,000,000 that has been invested in the railroads since 1916 has been represented by increase of their indebtedness; that never was their indebtedness or their total capitalization so small in proportion to their investment as now; and that if all the annual increase in the interest upon their indebtedness that has occurred since 1916 had been paid to their employees, it would have increased their wages only 3½ per cent in 1929 and about 6 per cent in 1933. Furthermore, about 45 per cent of the securities representing railroad indebtedness now owned by investors were issued with the express approval of the Interstate Commerce Commission.

"Unless we are going completely to abandon an economic system which is based mainly upon the private ownership and operation of property, we must, if prosperity is to be restored, act in accordance with the principle that capital, as well as labor, has rights which must be fully recognized. To 'scale down' the indebtedness and fixed charges of the railroads solely to enable them to employ more men or pay higher wages would so violate the rights of millions of persons who directly and indirectly own railroad bonds as to drive prospective investors away from the railroad industry. Recovery will be hindered, not stimulated, by measures or threats of measures that are ostensibly in the interest of labor or the public, but which undermine the confidence necessary to cause the renewal of investment in the railroads and other private industries that is essential to the welfare of the public, including labor. Manifest abuses have occurred in private business within the last decade which nobody can defend, but government interference should be for the purpose of remedying and preventing abuses and not of punishing and hampering all business because of abuses for which only a comparatively few have been responsible. The principal trouble with railway regulation always has been that it has hampered and punished railway managements and investors because of abuses committed by their predecessors.

"The previous improvement of general business was followed by a recession last fall, and the improvement since last fall has been followed by another recession since March which is reflected in railroad business. This undoubtedly indicates, as did the recession last fall, that recovery is being hindered, but not arrested. The present economic policies of the government, whether some of them are or are not sound as measures of reform, are new influences with which business men are not accustomed to dealing, and, therefore, create uncertainties and undermine confidence. I refer especially to measures which increase industrial production costs and prices, increase the disparity between agricultural and industrial prices, hamper the issuance of securities by private corporations and make investors doubtful of the future of private business.

"Recovery from all past depressions in this country has been accomplished by economic readjustments effected principally by the efforts of business men and farmers in conducting their own affairs. The marked recovery that began in the fall of 1932, and was renewed immediately following the opening of the banks in 1933, was due principally to the exertions of private initiative and enterprise. Government can and should help to create the conditions necessary to the restoration of prosperity, but the principal thing needed to make possible full recovery is not to increase, but to reduce, the trammels upon private initiative and enterprise, and give the greatest practicable encouragement and opportunity to the investment of capital and the employment of labor in private business. We need many reforms—more of them in our always inefficient and extravagant and often corrupt governments, than in business; but, with production, which is the source of all incomes, still about 40 per cent less than in 1929, what we need most of all is a renewal of private initiative and private investment, and a consequent restoration of normal production and employment."

Pullman Strike in Mexico Averted

A strike of Pullman Company employees in Mexico set for May 16 was averted when the company and the workers reached an agreement on differences.

Joseph G. Shryock Honored

Joseph G. Shryock, chief engineer of the Belmont Iron Works, Philadelphia, Pa., has been awarded a Certificate of Merit by the Franklin Institute of Philadelphia "for his ingenious combination of standard, structural shapes in the formation of a light bridge floor" known as the "Belmont" interlocking channel deck.

Advisory Board Meetings in June

The following Shippers' regional boards will meet in June: The Pacific Coast Shippers' Advisory Board on June 8 at San Francisco, Cal.; the Pacific Northwest Regional Advisory Board on June 21-22 at Spokane, Wash., and the Central Western Shippers' Advisory Board on June 30 at Troutdale-in-the-Pines, Colorado.

Corn King Limited Time Cut

The running time of the Corn King Limited, of the Chicago & North Western, operating between Chicago and Omaha, Neb., and Sioux City, Ia., has been cut 1 hr. 35 min. westbound between Chicago and Omaha and 1 hr. 5 min. between Chicago and Sioux City. Under the new schedule of 11 hr. 35 min., the train will leave Chicago at 8 p. m. and will arrive in Omaha at 7:35 a. m.. It will arrive in Sioux City at 8:30 a. m.

Grape Embargo Removed

The United States Department of Agriculture, through its Bureau of Plant Quarantine, has removed the quarantine embargo against the Spanish Almeria grape which became effective in 1924. Hereafter these foreign grapes may be admitted in any quantity. The Almeria grape was not produced in California in commercial quantity until after the embargo went into effect. Planting on a rather large scale then resulted. It is anticipated that the importation of grapes will lessen the demand for the California product and will result in a loss of railroad traffic.

Tank Car Service Code Approved

Administrator Johnson of the National Recovery Administration on May 23 approved the code of fair competition for the tank car service industry, effective on June 4. In the accompanying report General Johnson said that the necessity for stabilizing rentals and preventing excessive refunds of mileage allowances was shown by a study of the industry. The code provides that under emergency conditions the code authority may cause to be established a rental minimum for tank cars, subject to the approval of the Administrator.

Toledo Transportation Club Elects Officers

At a meeting of the Toledo Transportation Club on May 24, the following officers were elected for the ensuing year: President, W. J. Bailey, director of traffic of the Electric Auto-Lite Company; first vice-president, Fred M. Shelton, superintendent of the Wheeling & Lake Erie; second vice-president, U. E. McFarland, general traffic manager of the Owens-Illinois Glass Company; secretary, R. H. Sass, traffic representative of the Cleveland, Cincinnati, Chicago and St. Louis; treasurer, J. E. Rheiner, traffic representative of the New York, Chicago and St. Louis (re-elected).

Southern Ready for Extension of Low-Fare Experiment

The Southern, in accordance with the permission it recently received from the Interstate Commerce Commission, has completed arrangements for the extension to December 31 of the low-fare experiment which it inaugurated on December 1, 1933.

The fares which have been authorized to be continued are 1½ cents per mile one way in coaches; 2 cents per mile round trip, 15-day limit; 2½ cents per mile round trip, six months limit; and 3 cents per mile one way. The round-trip and 3 cents per mile tickets are good in sleeping and parlor cars upon payment of proper charges for space occupied. Pullman fares have been reduced one-third by elimination of the surcharge.

More Money Proposed for Co-ordinator's Expenses

An assessment on the railroads of $2 for each mile of road operated on December 31, 1933, for the expenses of the federal co-ordinator of transportation and his organization for the second year of the operation of the emergency transportation act, 1933, is proposed in bills introduced in Congress on May 21 by Chairman Dill of the Senate committee on interstate commerce and Chairman Rayburn of the House committee on interstate and foreign commerce.

Both the Senate and House Committees

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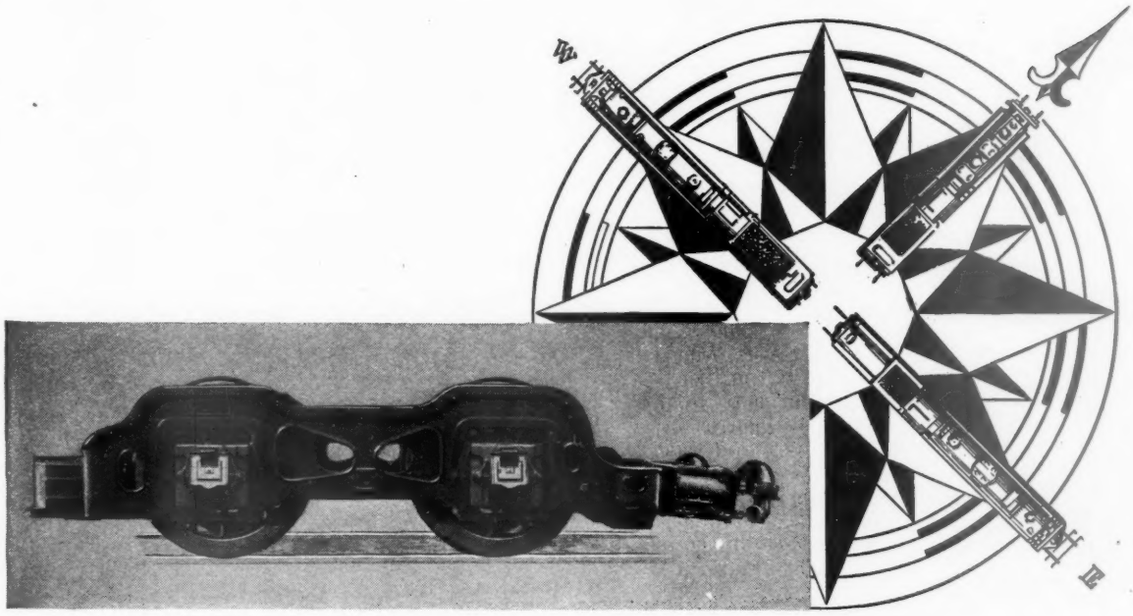
THE LOCOMOTIVE BOOSTER IS UNIVERSAL



ALL OVER THE COUNTRY IN EVERY KIND OF SERVICE BOOSTERS ARE SPEEDING OPERATION AND REDUCING COSTS

Wherever there is an important passenger train, The Booster is needed for an easy start and a better "on time" record.

Wherever there is a freight train, The Booster is needed to start and accelerate to road speed; to pull out of sidings or to lift over a grade, to reduce overtime.

Wherever there is a switch engine with exceptionally heavy duties, The Locomotive Booster is needed to get the drag moving, or help over the hump.

Intensive power production calls for the incorporation of The Locomotive Booster in the design of every locomotive—large and small. In no other way can you get the greatest work out of every pound of metal.

Unless a locomotive has a Booster, it must be built heavier in order to get the required tractive power to start the load it can haul at speed.

Once underway, such a locomotive carries excess weight. It is not loaded to capacity. It has a pair of drivers which could be dispensed with as far as hauling ability is concerned.

Contrast this with a Booster-equipped engine loaded according to capacity at speed. The Booster is cut in only when needed. It uses idle weight and spare steam for starting, accelerating and to maintain speed on grades.

Greater tonnage is hauled, resulting in lower operating costs.

The close tolerances essential to efficient Booster operation call for genuine repair parts made by Franklin.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

on May 24 favorably reported the bills.

Under the present law the assessment levied on the railroads for the first year was $1.50 a mile but Mr. Eastman has found that amount insufficient for the comprehensive investigations he has under way and those he desires to make. The original law provided for its expiration at the end of a year, on June 16, unless the President should by proclamation extend the period, but the President recently extended the time for another year.

Millions Visit Pullman Exhibit

A total of 5,525,391 persons have visited the Pullman Company's exhibits of accommodations during the period from March 28, 1931, to February 28, 1933. The records of visitors at the various exhibits were as follows:

Pullman building, Chicago—March 28, 1931, to February 28, 1933	298,299
Union station, Chicago—December 9, 1931, to February 28, 1933	800,910
Grand Central station, New York—December 15, 1931, to February 28, 1933	1,384,279
Pennsylvania station, New York—December 13, 1931, to February 28, 1933	1,562,567
Pennsylvania station, Pittsburgh, Pa.—February 24, 1932, to February 28, 1933	253,898
North Western station, Chicago—May 13, 1932, to February 28, 1933	201,093
N. Y. C. station, Buffalo, N. Y.—December 1, 1931, to June 9, 1932	106,310
Union station, Washington, D. C.—December 26, 1931, to July 11, 1932	195,654
Los Angeles, Cal.—June 1, 1932, to August 31, 1932	147,300
Union station, Kansas City, Mo.—July 16, 1932, to February 13, 1933	391,566
Union station, St. Louis, Mo.—March 2, 1932, to January 30, 1933	183,526

Sleeping Cars to Greenville, Maine

The Maine Central has completed arrangements with the Bangor & Aroostook for through passenger service between Washington, D. C. and Mt. Kineo, this summer, beginning on June 29. This service, by rail and boat, is to take the place of that which was discontinued by way of the Maine Central direct to Mt. Kineo, when passenger train service was suspended on the Mt. Kineo line north of Skowhegan.

Sleeping cars over the Pennsylvania, the New York, New Haven & Hartford, the Boston & Maine, the Maine Central and the Bangor & Aroostook will be run twice a week, leaving Washington at 11:55 a.m. and arriving at Greenville at 9:20 the next morning. Connection will be made at the dock at Greenville with steamer to Capens, the Mt. Kineo Hotel, Rockwood and Northwest Carry. Southbound, departure from Northwest Carry is at 9:45 a.m. and from Greenville at 3:25 p.m.

Sleeping cars will be run to and from New York (Pennsylvania station) four times a week.

Mechanical Division to Hold Limited Meeting June 27

In view of present business conditions, it has been decided that there will be no annual meeting of the Mechanical Division, A. R. A., for the year 1934. In lieu of an annual meeting the General Committee will hold a meeting at 10:00 A. M., Wednesday, June 27, at the Congress Hotel, Chicago.

At this meeting, the General Committee will consider reports from the committees of the Division, and attendance will be limited to chairmen of committees and subcommittees that have recommendations to submit for consideration. There will be no advance printing and distribution of committee reports, with the exception of the reports from the Arbitration Committee and Committee on Prices for Labor and Materials. Reports will be presented to the General Committee in mimeographed form and only those reports or portions of reports which the General Committee shall direct be submitted to letter ballot or be submitted to the members for information will be printed following the meeting. Any member railroad may be represented at this meeting if they so elect.

New Equipment

Class I railroads on May 1 had 15,964 new freight cars on order, according to reports compiled by the Car Service Division of the American Railway Association. On the same day last year, 1,561 new freight cars were on order and on the same date two years ago, there were 2,812. The railroads on May 1 also had 21 new steam locomotives on order and 107 electric locomotives. New steam locomotives on order on May 1, 1933, totaled 3 and on the same date in 1932, there were 31 on order. No figures are available to show the number of new electric locomotives on order in previous years.

In the first four months of 1934, the railroads installed 1,091 new freight cars. In the same period last year, 893 new cars were placed in service and for the same period two years ago, the total number installed was 1,341. While no new steam locomotives were placed in service in the first four months of 1934, reports showed that 6 new electric locomotives were installed. The railroads in the first four months of 1933 installed 1 new steam locomotive and 8 in the corresponding period in 1932. Freight cars or locomotives leased or otherwise acquired are not included in the above figures.

Fourth Section Relief Proposed for Differential Routes

Examiner G. L. Shinn, of the Interstate Commerce Commission, has recommended in a proposed report that the railroads be granted authority, subject to certain conditions, to continue or to establish and maintain domestic class rates and rates made on a percentage relation thereto, differentially related to the corresponding all-rail rates, between central territory, on the one hand, and, on the other, New England territory, including New York, N. Y., rate points, over standard lake-rail, differential lake-rail, differential all-rail, and ocean-rail routes, and trunk line territory over standard lake-rail and ocean-rail routes, without observing the long-and-short-haul provision of Section 4 of the interstate commerce act. It is also recommended that similar authority be granted in differential rates on import, export, coastwise and intercoastal traffic from or to central territory through the ports of Baltimore, Philadelphia, New York, Boston and other New England and Canadian north Atlantic ports, and that existing temporary relief in similar rates between eastern points and western trunk line territory be continued in force pending a determination of the permanent level of the corresponding standard all-rail rates.

R. & L. Historical Society

The Railway and Locomotive Historical Society (Boston) has issued Bulletin No. 34, a pamphlet of 71 pages, with the usual profusion of pictures of old locomotives. The opening article is a sketch of the late Henry M. Sperry, with a full-page portrait, together with Mr. Sperry's paper read at Pittsburgh in March, 1926.

Historical sketches are given of the Dutchess & Columbia, and the Virginia & Truckee, the latter including, also, notes on the Nevada County Narrow Gage. A dozen pages are devoted to the locomotives of the Boston & Maine.

The opening of the Boston & Worcester (now Boston & Albany) from Boston westward to Newton, 9 miles, on April 16, 1834, is the subject of a brief note in which it is stated that the first train on this line was the earliest regular steam train operated in the state of Massachusetts. The first time-table showed a train to Newton and back in the forenoon, and one in the afternoon. The trains in the afternoon usually carried 100 passengers or more, and on one day there were eight cars with 168 people. According to the Boston Advertiser, the directors announced that, although the trip was made in 21 minutes, they preferred a slower rate, and had instructed the engineer to make the passage usually in about 30 minutes. This speed they thought could be maintained without hazard to the passengers or any extraordinary wear of the locomotive and cars. For the first year the passenger trains were hauled most of the time by the locomotive Meteor, built in England, by Stephenson. The first passenger cars, with stage-coach bodies, were built by Osgood Bradley, at Worcester, and were hauled to Boston, 44 miles, by horses over the highway. The first president of the road was Nathan Hale, who held office until 1849. He was the nephew of Captain Nathan Hale, of Revolutionary fame, and the grandfather of Arthur Hale, of Baltimore.

Western Railway Club Elects New Officers

The fiftieth annual dinner of the Western Railway Club was held Monday evening, May 21, at the Hotel Sherman, Chicago, the principal feature of the evening being an address by Samuel Vauclain, chairman of the board of directors of the Baldwin Locomotive Works. In discussing the subject "What Size Wheels?", Mr. Vauclain presented some unusually interesting figures and slides showing the trend toward a common size for locomotive driving wheels used in both freight and passenger service. He stated that the time is apparently ripe for the adoption of one standard size wheel for road locomotives, namely, 72-in. wheel centers, with 3-in., 3½-in. or 4-in. tires.

A brief business meeting of the club was held after the dinner, the following officers being elected for the year 1934-1935: President, A. N. Williams, president and general manager, Chicago &

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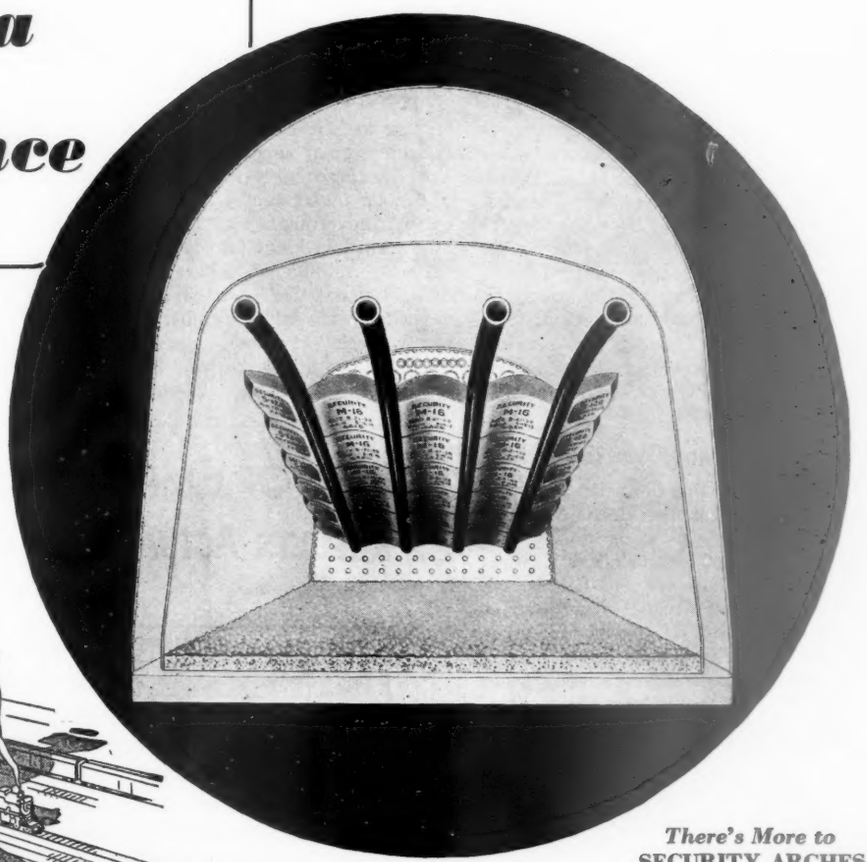
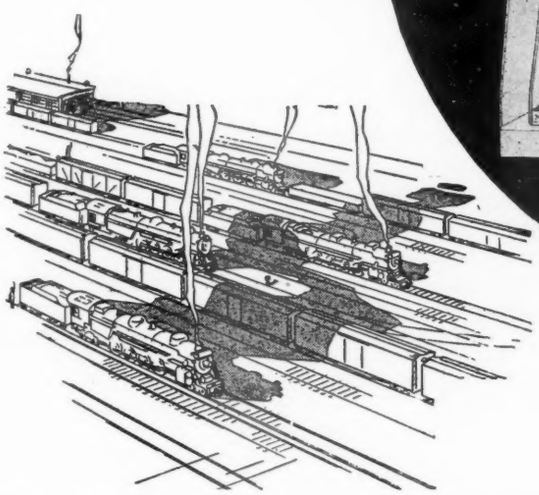
Special Brick Shapes *are a* *Nuisance*





There's More to
SECURITY ARCHES
Than Just Brick

The initial standardization of Arch Brick shapes and sizes and Arch tube spacing was the work of the American Arch Company.

It is a work that goes forward constantly and saves the Stores Department a vast amount of trouble.

The easiest solution to many a locomotive Arch engineering difficulty would be to use a special brick shape. But this the American Arch Company is willing to do only as a last resort. Over 50% of all Arch Brick is covered by 6 separate patterns

The insistence of American Arch Company on adhering to standards has simplified the work of the Storekeeper. It is only one of the many ways in which American Arch Company is serving the railroads.

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

NRA MEMBER U.S. WE DO OUR PART

AMERICAN ARCH CO.
INCORPORATED

Locomotive Combustion Specialists » » »

Western Indiana; first vice-president, L. Robinson, assistant to general superintendent of motive power, Illinois Central; second vice-president, D. C. Curtis, chief purchasing officer, Chicago, Milwaukee, St. Paul & Pacific; secretary, C. L. Emerson, division master mechanic, Chicago, Milwaukee, St. Paul & Pacific, and treasurer, J. W. Fogg, MacLean-Fogg Lock Nut Company. New members were elected to the board of directors, which now consists of: W. A. Bender, master car builder, Alton; J. E. Buker, Vapor Car Heating Company; J. T. Gillick, vice-president, Chicago, Milwaukee, St. Paul & Pacific; H. P. Allstrand, principal assistant superintendent of motive power and machinery, Chicago & North Western; C. T. Ripley, chief mechanical engineer, Atchison, Topeka & Santa Fe; G. F. Slaughter, American Steel Foundries; P. J. Colligan, general superintendent of motive power, Chicago, Rock Island & Pacific; O. E. Ward, superintendent of motive power, Chicago, Burlington & Quincy; L. R. Wink, assistant superintendent of the car department, Chicago & North Western; E. E. Thulin, Duff-Norton Manufacturing Company; F. G. Gurley, assistant to vice-president, Chicago, Burlington & Quincy; and retiring president, J. E. Bjorkholm, assistant superintendent of motive power, Chicago, Milwaukee, St. Paul & Pacific.

Row in Parliament Over C. N. R.

A hot fight over the Canadian National Railways developed in the House of Commons at Ottawa last week during the Budget debate when Hon. Robert J. Manion, Minister of Railways and Canals, replying to Liberal criticisms of the budget on the ground that it showed no great economies when these were most needed and that it would not revive Canada's trade as it was based on economic nationalism. Dr. Manion retorted by repeating to the House his previous charges that the Liberals should be the last to demand economies because when in office they had been guilty of wild extravagance in the administration of the Canadian National and had, so far as that road was concerned, "rolled the political pork barrel from the Atlantic to the Pacific."

Hon. William D. Euler, a member of the former Liberal Cabinet which was responsible for the financing of the Canadian National when the late Sir Henry Thornton was its president, denounced attacks on the late president, said the outlays incurred by the railway from 1922 to 1930 were such as were undertaken by all private concerns, and that much of the present government's castigation of the C. N. administration was due to the fact that the publicly-owned road had become too strong a competitor of the Canadian Pacific. It was the fight between these two men at a night sitting of the House after the speech of Dr. Manion in the afternoon of the same day that greatly warmed the atmosphere.

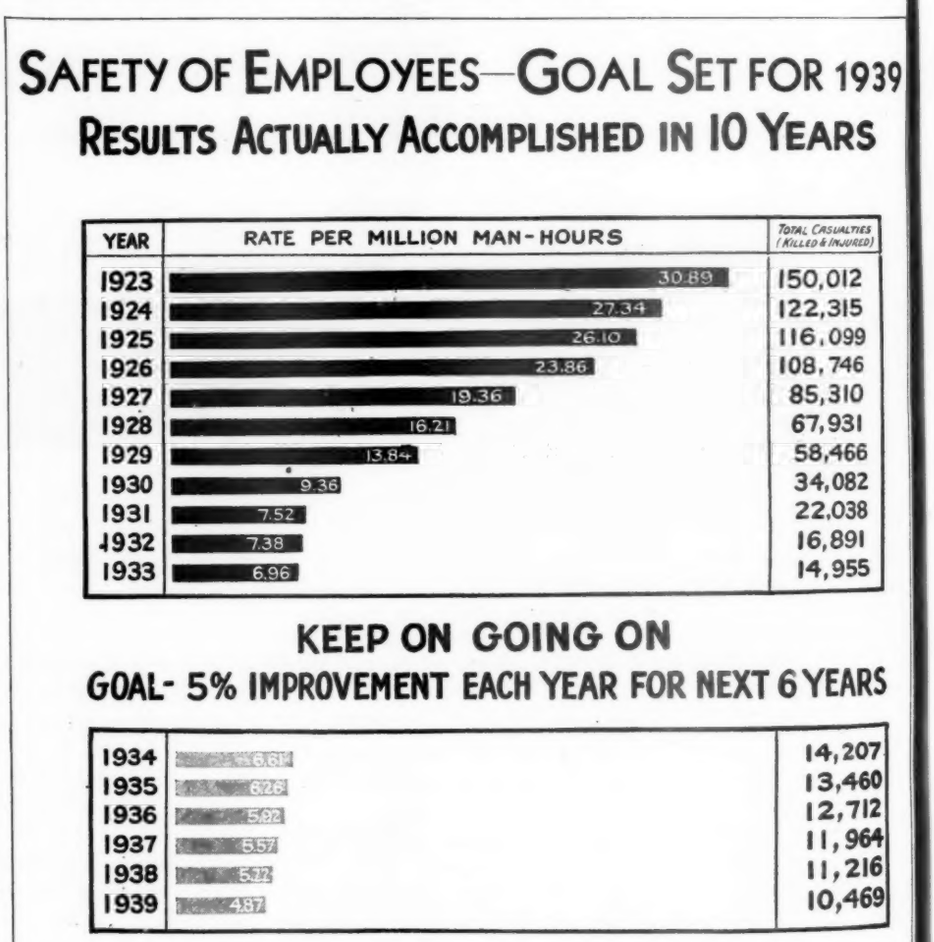
"We acquired," said Mr. Euler, "a conglomeration of four so-called railway systems—the Canadian Northern, the Grand Trunk Pacific, the Grand Trunk and the Intercolonial, which we had already had. Then, just as they had been taken over, the Liberal party came into power, and they chose Sir Henry Thornton for the great task of welding these railway systems into one great system capable of competing with the Canadian Pacific. The work he undertook was a colossal task. He had the duty of co-ordinating these different railways into one great system. He had to buy a great deal of rolling stock, because on most of the roads the rolling stock was quite insufficient. He had to buy heavier motive power, larger locomotives; bridges had to be rebuilt; and heavier rails had to be laid. And the cost was very considerable. It took hundreds of millions of dollars — regarding which there has been so much criticism—money properly spent, to put the system into that condition in which it could compete with the Canadian Pacific."

"My hon. friend," said Dr. Manion, referring to Mr. Euler, "who boasts that he is such a great supporter of public ownership, has been one of the deadliest enemies of public ownership in this country. He sat in a government that not only permitted but encouraged the expenditure of hundreds of millions of dollars by the Canadian National that never should have been expended. He sat as member of a government which permitted hotels to be built at Halifax, at Saskatoon and at Vancouver; that permitted railway lines to be purchased all over the east and to some extent in the west; that permitted the expenditure of $50,000,000 for the Montreal terminals and of $40,000,000 to $50,000,000 for the construction of branch lines, perhaps half of which were needed, in the west. He was a member of the government which permitted ships costing $8,000,000 to be built on the Pacific coast which were never used and which are rotting at the docks today."

Safety Notes for June

The circular of the Safety Section, A. R. A., for June (No. S-402) begins with a recital of past accomplishments, the diminution in casualties to employees during the 11 years 1923-33 being shown in graphic form, as reproduced below. The goal, it will be seen, calls for a reduction of 5 per cent annually during the next six years. As the goal—a reduction of 35 per cent in seven years—which was set in 1924, was more than accomplished, the committee calls upon all interested to accomplish the new and higher goal now proposed.

This goal, it will be seen, calls for an average in 1939 of 4.87 casualties per million man-hours worked. This figure is only a little over one-half the rate recorded for the year 1930.


SAFETY OF EMPLOYEES—GOAL SET FOR 1939
RESULTS ACTUALLY ACCOMPLISHED IN 10 YEARS
YEAR
RATE PER MILLION MAN-HOURS
TOTAL CASUALTIES (KILLED & INJURED)
1923 30.89 150,012
1924 27.34 122,315
1925 26.10 116,099
1926 23.86 108,746
1927 19.36 85,310
1928 16.21 67,931
1929 13.84 58,466
1930 9.36 34,082
1931 7.52 22,038
1932 7.38 16,891
1933 6.96 14,955
KEEP ON GOING ON
GOAL- 5% IMPROVEMENT EACH YEAR FOR NEXT 6 YEARS
1934 6.61 14,207
1935 6.28 13,460
1936 5.92 12,712
1937 5.57 11,964
1938 5.22 11,216
1939 4.87 10,469
YOU may be among those whose lives will be saved by the success of this endeavor.

Poster No. 132, Committee on Education, Safety Section, American Railway Association.

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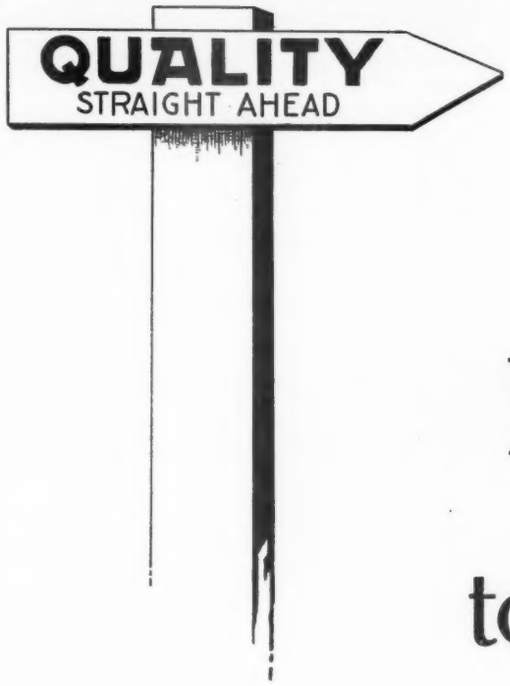
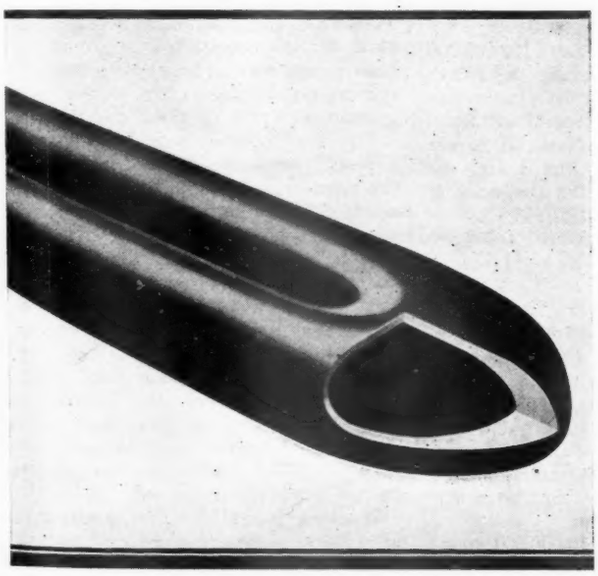


There's No Shortcut to *Quality*

NRA MEMBER U.S. WE DO OUR PART



Remanufactured superheater units are made by the same methods as new units—they are a quality product.

When it comes to reconditioning unserviceable superheater units, there is no shortcut to quality.

When new, superheater units are designed to exacting specifications for the highest superheating efficiency and to withstand the severity of the operating conditions to which they are exposed.

To restore failed or unserviceable units to a condition comparable to new units, requires rebuilding to original proportions and structural strength. This is made possible only through the Elesco unit remanufacturing service . . . which is assurance of renewed service life for many years at full efficiency.

The cost is much less than for new units—and when indirect charges for shop maintenance and lowered efficiency are taken into account—the cost for remanufacturing is far less than for repairing.

THE SUPERHEATER COMPANY

Representative of AMERICAN THROTTLE COMPANY, Inc.

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NEW YORK

ELESCO

Peoples Gas Building
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Canada: The Superheater Company, Limited, Montreal

Superheaters - Feed Water Heaters - Exhaust Steam Injectors - Superheated Steam Pyrometers - American Throttles

A Million Visitors to the U. P. Train

A total of 1,195,609 persons passed through the Union Pacific's high-speed streamlined train during its two months' exhibition tour of 65 cities. The tour ended on May 5. The train covered a total of 12,625 miles, 2,309 miles of which had been east of Chicago and 10,316 west thereof. The train traveled on the rails of 14 different railroads, in addition to those of the five units comprising the Union Pacific System. Nearly 500 cities and towns were visited along the route, which traversed 20 different states and the District of Columbia.

Every sort of climate was experienced. In the East, temperatures as low as 10 deg. below zero were encountered, while on the Pacific coast as high as 92 deg. above was experienced. Snow, high winds, rain and dust storms were met at different points.

The train traveled in every sort of situation. Every grade was made at the highest speed set for it in regular service, some of the grades being as high as five per cent, and all were made at half throttle. From sea level the train went to altitudes as high as that of Sherman Hill, Wyo., 8,013 ft. above sea level. At no time did the train need assistance of any kind.

No attempt was made at any time to test the train for speed. However, it was run on the schedules of the fastest trains of the different railroads traversed. Just west of North Bend, Neb., the train did 1 mile in 33 sec., a rate of 109.3 miles per hour. Its general average speed was well above 70 miles and most of the running between stations was at about 80 miles an hour. In a special test run recently the train registered 111 miles an hour.

The biggest single day's visitation was at Denver, Colo., where 36,801 persons passed through the aisles. The biggest two-day show was at Portland, Oregon, with 53,210 visitors.

On April 19, the train made its first revenue trip—a two-day tour to Gering, Neb., sponsored by the Omaha Chamber of Commerce.

Railroads Suffer Loss in Stockyards Fire

An eight-million-dollar fire which broke out in the Chicago stockyards at 3:30 p.m. on Saturday, May 19, and which was aided by strong winds and low water pressure, caused considerable damage to railroad property located within the area affected. While 75 freight cars of several companies were destroyed and 50 were damaged, the major loss was suffered by the Chicago Junction, which renders switching service to the burned area. The damage to track involving 3 miles of ties and rails, including one-half mile of double running track, 4 loading tracks, 4 storage tracks and 2 lead tracks, is estimated at $30,000. In addition to the track damage, a car inspector's building and the general manager's, treasurer's and auditor's offices and records were completely destroyed. The company's supply room also was damaged. The Stockyards Agency, which was located in the Stockyards Exchange building and which bills stockyards freight for 26 railroads, lost its records and office equipment.

Because of the alertness of train crews, it was possible to pull out and save 50 cars from the outbound tracks. The cars destroyed include 14 New York Central stock cars, 1 Santa Fe and 1 Rock Island box cars, 5 Armour stock and 2 refrigerator cars, several Arms Palace cars, and 18 cars so badly burned that ownership can only be traced by the numbers on their wheels.

Notwithstanding the fire, which was not under control until 7:30 p.m., the Chicago Junction was able to dispatch trains on schedule from its western yards adjacent to the fire. However, the work was hampered by the crowds of sightseers on the tops of cars. Before a train could be moved, it was necessary to drive 500 persons from the roofs of the cars.

By 5 p.m. on Sunday, the Chicago Junction had restored both of its running tracks and provided facilities for moving stockyards shipments. As a temporary measure, the railroad is using its inbound tracks, which were not damaged, for outbound business.

Safety Award Won by Chicago & North Western

Bronze plaques were presented to 10 railroads by the National Safety Council at a dinner in the Union League Club, Chicago, on May 22, for outstanding records in accident prevention during 1933. The winning roads were as follows:

Group A (roads working 100,000,000 man-hours or more), Chicago & North Western, on whose behalf the plaque was received by G. V. Vilas, general manager, from the president of the National Safety Council, John E. Long. Mr. Long, superintendent of safety of the Delaware & Hudson, acted as toastmaster.

Group B (from 50,000,000 to 100,000,000 man-hours), New York, New Haven & Hartford; plaque received by R. L. Pearson, vice-president and general manager.

Group C (from 20,000,000 to 50,000,000 man-hours), Chicago, St. Paul, Minneapolis & Omaha; plaque received by Carl R. Gray, Jr., vice-president and general manager.

Group D (10,000,000 to 20,000,000 man-hours), Los Angeles & Salt Lake; plaque received by Carl R. Gray, Sr., president of the Union Pacific System.

Group E (5,000,000 to 10,000,000 man-hours), Duluth, Missabe & Northern; plaque received by C. E. Carlson, president.

Group F (2,000,000 to 5,000,000 man-hours), Detroit, Toledo & Ironton; plaque received by S. P. Ruddiman, president.

Group G (less than 2,000,000 man-hours), Chicago & Illinois Midland; plaque received by F. L. Schraeder, assistant to the vice-president.

Plaques were also awarded the Union Railroad Company of Pittsburgh, Pa., and the Newburgh & South Shore of Cleveland, Ohio, in the switching and terminal class, and to the St. Louis zone of the Pullman Company in the Pullman Company auxiliary group. A special certificate of honorable mention was awarded the Chicago, Milwaukee, St. Paul & Pacific for unusual employee safety during the year, while four units of the New York Central Lines—the New York Central, the Michigan Central, the Boston & Albany and the Pittsburgh & Lake Erie—also received honorable mention for continuing to operate through 1933 without a passenger accident. The Missouri-Kansas-Texas Lines were given honorable mention for operating throughout 1933 without an employee fatality.

County Urges Consideration of Eastern Unification Program

Unification of all the railroads in Eastern United States, including New England and the Pocahontas region, was suggested "for consideration and discussion" by A. J. County, financial vice-president of the Pennsylvania, at the round-table conference of the Wharton Alumni Institute of Business, University of Pennsylvania, held in Philadelphia, Pa., on May 17. His proposal, he stated, "is not a Pennsylvania Railroad plan, nor," he added, "is it essential for the Pennsylvania Railroad Company, which is in splendid financial condition, has met all of its obligations, and has no bank loans, Government obligations, nor debts that it cannot pay."

The program advanced by Mr. County calls for the formation of a new corporation to be called, for convenience, the United Eastern Railroad Company, probably with a Federal charter. This company would take possession of, manage, operate and maintain the physical properties of all the railroads joining in the plan. To obtain the maximum benefits of the plan, Mr. County stated, all roads in the eastern territory should participate. The corporate existence of the present railroad companies would continue undisturbed.

The new company would be directed by a board composed of the presidents of the member railroads. Each member road would have voting power proportionate to its percentage of the total net railway operating income of the group, over some test period to be decided upon by agreement. The net railway operating income of the United Eastern Railroad Company, in turn, would be distributed to the member companies upon the same basis. Out of the funds so received, each member company would pay its own fixed charges and such dividends as conditions might justify. Their separate corporate existence would be preserved.

Working capital for the operating company would be required in substantial amount, ultimately as much as $100,000,000. This Mr. County stated, might be furnished in whole or in part by the member companies, or in whole or in part by government advances, based on the united credit of the member railroads.

If such a plan proved successful in the eastern territory, it could later be extended to other sections of the country, Mr. County said. In his opinion it offers a possible solution to the problem of keeping the railroad industry self-supporting on its own feet, and of avoiding the alternative of government ownership, which Mr. County believes is neither necessary nor desirable for the public interest.

Public regulation, he explained, would be retained, with complete authority to safeguard against rates or fares higher than should justly be exacted, to prevent dis-

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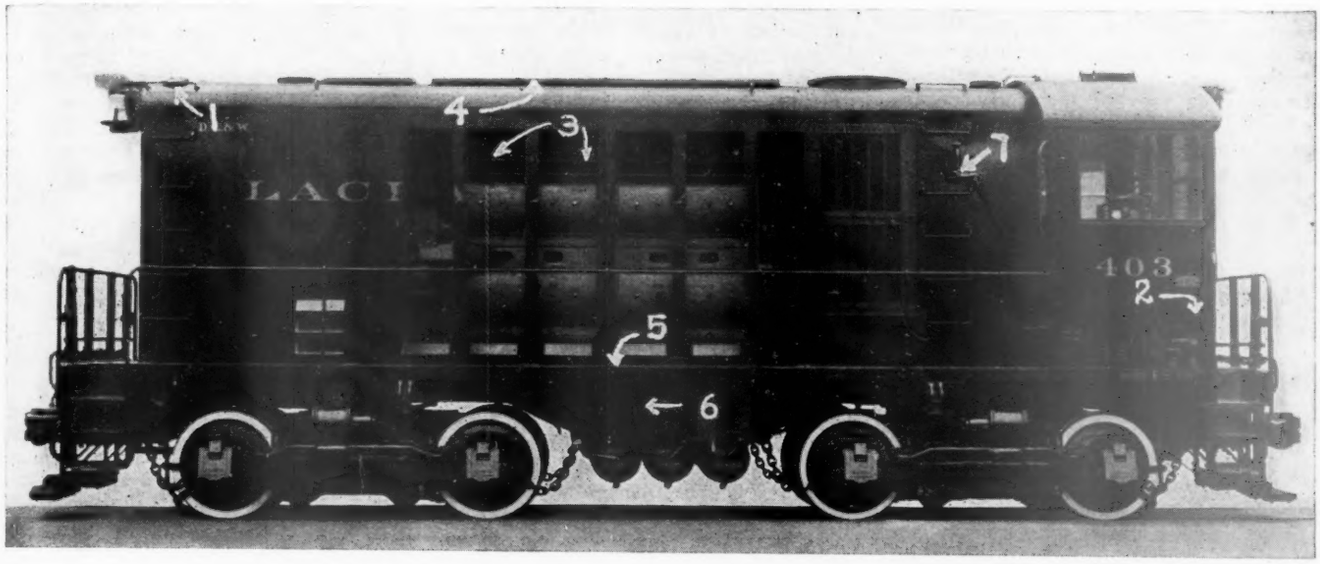
RAILROAD DIESELS FOR RAILROAD MEN



—AIR SIDE—

1 Accessible sand box filling.

2 Accessible fuel oil filling.

3 Full length inspection door openings for access to and removal of crank case and valve stem cover plates.

4 Removable hatch cover over engine. This cover has an opening around edge to act as a ventilator over engine.

5 Trap door in running board over batteries furnishing accessible point for servicing.

6 Side door on battery box — permitting easy removal.

7 Sander traps exposed for ready repairs and cleaning.

The importance of accessibility and its direct effect on maintenance costs is ingrained in the Alco organization through 100 years experience building railway motive power.

This series of advertisements (of which this is No. 1) will show why the Alco Diesel should be attractive to railroad men.

Always remember that the total cost of any motive power unit equals first cost plus operating cost plus maintenance. Considering these three factors as a whole the Alco Diesel becomes an outstanding purchase.

AMERICAN LOCOMOTIVE COMPANY

ALCO DIESEL

30 CHURCH STREET · NEW YORK · N·Y·

criminations, and to require proper standards of service. These, Mr. County said, are the legitimate objects of regulation. He added, there is not one of them that cannot be better and more cheaply accomplished by consolidation and intelligent regulation than by the wasteful machinery of competition imposed by the Anti-Trust laws.

The effect upon labor of a united eastern plan must be frankly realized, Mr. County said. Unification would necessarily mean that ultimately a given volume of traffic would be handled with fewer employees than under existing conditions. However, in view of the Poland report upon the Prince Plan, made to the federal co-ordinator of transportation, Mr. County estimated that an increase of 10 to 15 per cent in traffic would absorb the probable decrease of employees.

Unification Needed in Canada Beatty Insists

(*Continued from page 788*)

449,780 for interest. That was only 33.3 per cent of the amount necessary to pay interest at 5 per cent on the total debt as at the end of 1931.

"If the Canadian Pacific was earning sufficient to pay reasonable dividends to its stockholders, and if the Canadian National was earning sufficient to pay interest, there would still be a recurring economic loss of many millions in the effort to maintain duplicate facilities and a larger plant than is necessary to handle the traffic of the country. Wisdom would seem to insist that all forms of preventable waste should be eliminated in a young country such as Canada, the speed and extent of the development of which bears a direct relation to the weight of the burden on its taxpaying citizens.

"When I appeared before the Royal Commission, I suggested that the solution which would best serve the interest of the taxpayer and of the railway security holder would be unification of the two railway systems for purposes of administration only. I proposed that the management should be in private hands, and in the light of our experience of the two forms of administration during the past decade, few would question the wisdom of that provision. As the result of an exhaustive analysis of the accounts by our officers, I have stated that under the form of unification proposed, there would be a saving of $75,000,000 in a year of normal traffic, which amount would be increased as the trade of the country expanded in future years. It was the intention that these savings would be divided between the owners of the two properties, on a basis to be negotiated. It is the only practicable plan yet proposed which offers the taxpayer the prospect of relief from the ever-growing mountain of railway debt.

"Canada has made capital expenditures on canals, principally on the St. Lawrence and between the Great Lakes, to the sum of $247,917,853. Another great project is in the offing. It has, in addition, spent large amounts annually on maintenance and operation. It would be foolish to deny that these waterways have played an important part in the development of Canadian settlement, industry and trade. It may be questioned, however, if the taxpayer will forever continue to favor the free use of all these facilities when he turns to contemplate his immense investment in railways, to which they offer an alternative form of transportation. As a result of unregulated competition on the waterways, steamship owners during the past few years have suffered heavy losses, and the lack of stability in the rate structure has brought about further damage to the rail lines.

"Highway competition is a serious matter to the railways of Canada, as it is to the railways of all other civilized countries. These vehicles, no doubt, have their place in the economy of things, but it is most unjust that they should have the free use of facilities provided at public expense, without proper regulation of tolls, service and operating methods. The unfairness of this form of competition is universally recognized and measures have been taken in several countries, notably in Great Britain, to control it, and to restrict motor vehicles to their proper field.

"One of the lessons learned from the depression is that throughout the world, and on this continent particularly, we have gone ahead building up new forms of transportation, and extending old forms, without stopping to consider their relation to each other, or the relation of each to the whole economic structure. As a result, we have acquired an overhead of staggering dimensions. There may be some truth in the old saying that competition is the life of trade, but, carried to extremes, competition, by placing too great a burden on trade, may become its assassin."

Construction

CHICAGO GREAT WESTERN.—A contract has been awarded to the Koss Construction Company, Des Moines, Iowa, for the construction of a 65-ft. plate-girder bridge on concrete abutments to carry this company's tracks over Euclid avenue at Des Moines.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—A contract has been awarded to T. McQueen, Forest Park, Ill., for the construction of a highway subway south of Donovan, Ill., at a cost of more than $50,000. Funds for this project are being furnished by the federal government.

MISSOURI PACIFIC.—A contract has been awarded to Edwin Ahlskog, Chicago, for repairs to the headhouse of this company's grain elevator on Primm street, St. Louis, Mo., which was damaged by explosions and fire on May 9.

NATIONAL RAILWAYS OF MEXICO.—Plans are being made for the construction of a 75-mile line in southern Durango to serve a rich mining and agricultural district, at a cost of more than $500,000.

Equipment and Supplies

P. W. A. Loans to Railroads

The Public Works Administration has announced that actual disbursements to the amount of $43,590,000 had been made by it up to May 15 on its loans to railroads, on allotments amounting to $199,607,000. The borrowing companies draw their loans down as they require money to meet payrolls on work being done by their own forces and to pay for materials, rails, engines, and cars, as delivered. Material and rail manufacturers, and locomotive and car builders, finance themselves until they are ready to make delivery. At delivery time the railroads requisition money from the P. W. A. and pass it along to the manufacturers. Approximately $85,000,000 of the allotments is being used for new cars and locomotives.

PASSENGER CARS

THE NEW YORK, NEW HAVEN & HARTFORD has given an order to the Goodyear-Zeppelin Corporation for a streamlined train consisting of three articulated cars, with a Diesel-electric power plant at each end of the train. Inquiry for this equipment was reported in the *Railway Age* of February 17.

FREIGHT CARS

THE PENNSYLVANIA WATER AND POWER COMPANY is inquiring for two transformer cars, one of 160 tons' capacity and the other of 110 tons' capacity.

IRON AND STEEL

THE CHESAPEAKE & OHIO has ordered 35,000 tons of rails, placing 15,085 tons with the Illinois Steel Company, 11,900 tons with the Inland Steel Company, 4,515 tons with the Carnegie Steel Company and 3,500 tons with the Bethlehem Steel Company.

MISCELLANEOUS

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has placed on order with the Timken Roller Bearing Company, Canton, Ohio, for bearings and boxes for 50 passenger coaches which the railroad is building in its Milwaukee shops.

THE LOCOMOTIVE FIREBOX COMPANY has received an order from the Delaware, Lackawanna & Western for 20 sets of three syphons each for application to the twenty 4-8-4 type locomotives which this road has ordered from the American Locomotive Company, as reported in the *Railway Age* of April 14. Among other recent orders for thermic syphons are two for application to existing locomotives on foreign roads, namely, six sets of two syphons each for application to locomotives on the National Railways of Mexico and two sets of two syphons each for application on 2-8-2 type locomotives of the Peiping & Liao-Ning, China.

Continued on next left-hand page

BUT THE CAB SIGNAL TURNED RED-

Shortly after passing the "clear" wayside signal, the indication on the "Union" Coded Continuous Cab Signal suddenly turned red. Bringing his train under control, the engineman found, upon cautiously rounding a curve, that a facing point crossover switch had been left open by the crew of a work train.

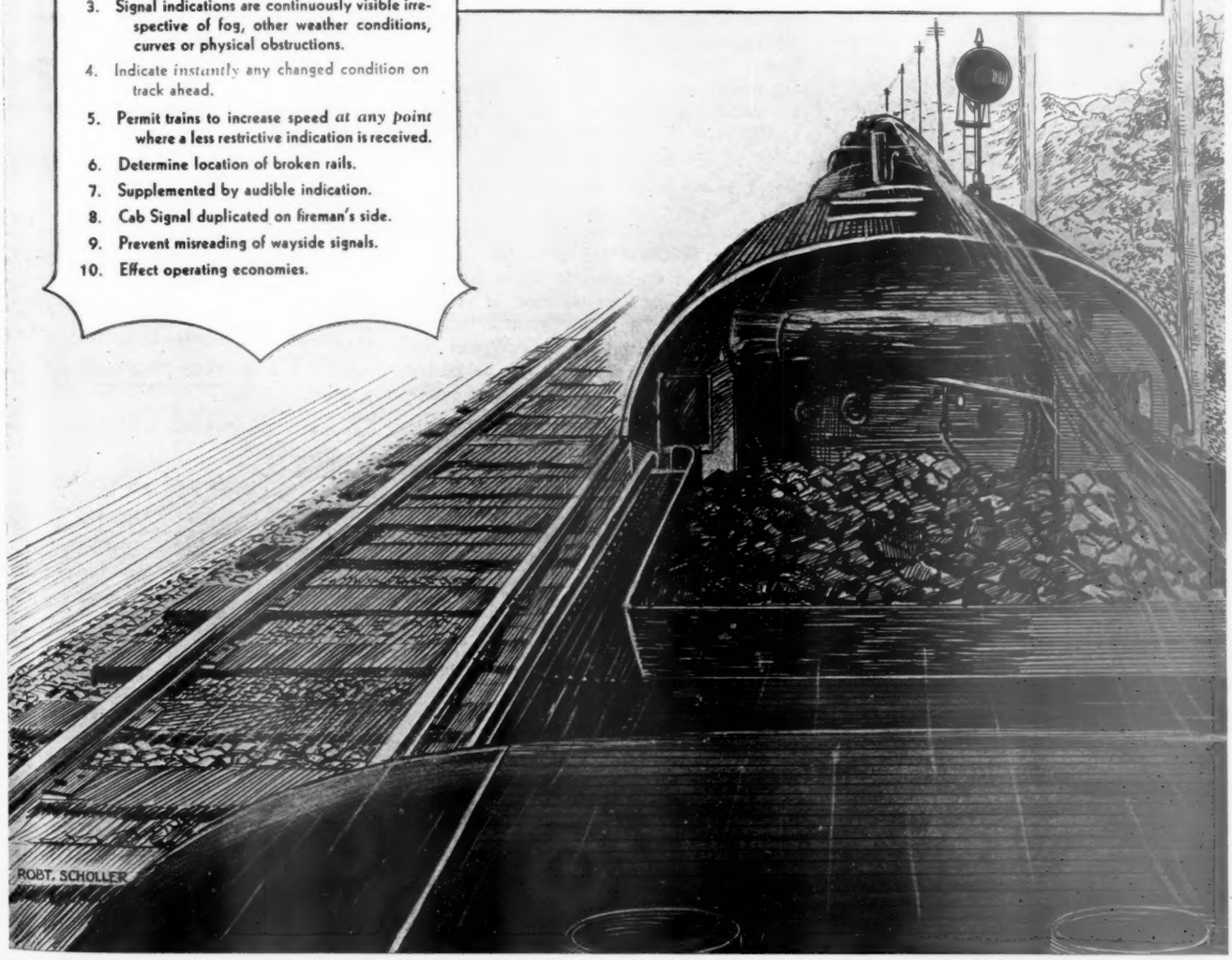
The value of indications that *instantly* warn of any changes in track conditions ahead is incalculable.

And this is but one of the many good reasons why you should install "Union" Coded Continuous Cab Signals.

10 GOOD REASONS—

—Why "Union" Coded Continuous Cab Signals are effective in improving railway service:

1. Increase safety of train operation.
2. Expedite traffic.
3. Signal indications are continuously visible irrespective of fog, other weather conditions, curves or physical obstructions.
4. Indicate instantly any changed condition on track ahead.
5. Permit trains to increase speed *at any point* where a less restrictive indication is received.
6. Determine location of broken rails.
7. Supplemented by audible indication.
8. Cab Signal duplicated on fireman's side.
9. Prevent misreading of wayside signals.
10. Effect operating economies.



1881 **Union Switch & Signal Co.** 1934

SWISSVALE, PA.

NEW YORK MONTREAL CHICAGO ST. LOUIS SAN FRANCISCO

Supply Trade

Willits H. Sawyer, president of **Stevens & Wood, Inc.,** of New York, has been appointed as the administration member of the code authority for the locomotive manufacturing industry.

The American Sheet & Tin Plate Company, Pittsburgh, Pa., has opened an additional office in the Chicago district, in the Bankers building, Milwaukee, Wis., with **A. P. Bronson,** assistant manager of sales, as resident manager; **W. P. Andrews** has been appointed assistant manager of sales in the Chicago office effective June 1.

B. J. Cross, who from 1921 to 1931 was associated with the engineering activities of Combustion Engineering Corporation, has rejoined the engineering department of the present organization, the **Combustion Engineering Company, Inc.,** New York. He will be engaged in development and research work under the direction of **John Van Brunt,** vice-president in charge of engineering, and of **Henry Kreisinger. William Lloyd,** for many years identified with the design, manufacture and sales of Coxe stokers, has again become associated with the engineering department of Combustion Engineering Company, Inc.

The Heywood-Wakefield Company, Boston, Mass., has purchased the complete physical assets of the car seat business of the **Hale & Kilburn Company,** Philadelphia, Pa. Production of the latter company's seats and chairs will in the future be combined with the Heywood-Wakefield car seat activities at its Gardner, Mass., plant and at its general office in Boston, Mass. **Walter M. Swope,** formerly general manager of sales of Hale & Kilburn represents the enlarged Heywood-Wakefield car seat interests, with headquarters at Philadelphia. **Alfred B. Bell,** formerly chief engineer in charge of seat design and engineering of the Hale & Kilburn Company will become associated in the same capacity with the Heywood-Wakefield Company at the Gardner plant, as also will **Otto G. Wolf,** formerly chief estimator of Hale & Kilburn, with many former members of the Hale & Kilburn staff. Complete and prompt service on all Hale & Kilburn seat assemblies and parts will be maintained by the Heywood-Wakefield Company. The Hale & Kilburn Company's tools, dies, patterns and equipment are now in course of installation in the Heywood-Wakefield plant.

OBITUARY

Raymond Boiselle, representative of the Westinghouse Air Brake Company at New York, died on May 22 in a hospital at Reading, Pa., at the age of 43. Mr. Boiselle died from injuries received in an automobile accident on May 11. He had been with the Westinghouse Air Brake Company since 1912, and previous to that served on the Missouri Pacific and the Atchison, Topeka & Santa Fe. During the war he served as a captain in the Army.

Financial

ALABAMA, TENNESSEE & NORTHERN.—*Pledge of Equity.*—The Interstate Commerce Commission has authorized this company to pledge with the Railroad Credit Corporation its equity in $462,000 of its prior lien 6 per cent bonds now pledged with the Reconstruction Finance Corporation.

ATCHISON, TOPEKA & SANTA FE.—*Abandonment and Trackage Rights.*—The Interstate Commerce Commission has authorized this company to abandon its line from Abilene, Kans., to a connection with the Chicago, Rock Island & Pacific, two miles west of Solomon, 9.8 miles, and to abandon operation under trackage rights over the line of the latter company from the above-named point of connection to Salina, 10 miles. The Rock Island has been authorized to abondon its line, over which the Santa Fe has been operating under trackage rights, and to abandon operation under trackage rights over the Santa Fe between Abilene and the point of connection west of Solomon. Both the Rock Island and the Santa Fe will hereafter operate between Abilene and Salina, 19.6 miles, over the Union Pacific. Necessary short connecting tracks will be constructed. The Santa Fe and Rock Island will maintain station facilities on the joint track separate from those of the Union Pacific.

BALTIMORE & OHIO.—*P. W. A. Loan.*—This company has applied to the Interstate Commerce Commission for approval of the expenditure of $905,190 for the acquisition of one electric locomotive and 16 passenger cars to be used in streamline trains with a proceeds of a loan of $900,000 allotted by the Public Works Administration. The company also asked for authority for an issue of $900,000 of equipment trust certificates.

CENTRAL OF GEORGIA.—*Protective Committee Revised.*—The Protective Committee for the holders of securities of this company, headed by Henry W. George, of the Metropolitan Life Insurance Company, has decided that separate committees henceforth should be formed to deal with each class of security. Accordingly a new committee, under the chairmanship of Mr. George, has been formed to represent holders of refunding and general mortgage bonds, and a consolidated mortgage bond committee has been set up under the chairmanship of L. O. Fisher, of the Equitable Life Assurance Society. No committees have as yet beeen formed to represent the holders of first mortgage and divisional mortgage bonds.

COLORADO & SOUTHERN.—*Annual Report.*—The 1933 annual report of this company shows net deficit, after interest and other charges, of $575,348, as compared with net deficit of $733,888 in 1932. Selected items from the income statement follow:

	1933	1932	Increase or Decrease
Average Mileage Operated	2,105.11	2,051.90	+53.21
RAILWAY OPERATING REVENUES	$11,789,557	$12,141,282	−$351,725
Maintenance of way	1,119,421	1,517,605	−398,184
Maintenance of equipment	1,950,055	2,239,458	−289,403
Transportation	3,835,369	4,123,448	−288,079
TOTAL OPERATING EXPENSES	8,018,925	8,742,003	−723,078
Operating ratio	68.02	72.00	−3.98
NET REVENUE FROM OPERATIONS	3,770,633	3,399,279	+371,354
Railway tax accruals	1,120,660	1,066,040	+54,620
Railway operating income	2,644,283	2,329,174	+315,109
Equipment rents—Net Dr.	376,789	370,969	+5,820
Joint facility rents—Net Dr.	277,580	266,230	+11,350
NET RAILWAY OPERATING INCOME	1,989,580	1,691,975	+297,605
Non-operating income	205,454	364,995	−159,541
GROSS INCOME	2,195,034	2,056,970	+138,064
Interest on funded debt	2,685,275	2,697,252	−11,977
TOTAL DEDUCTIONS FROM GROSS INCOME	2,770,381	2,790,858	−20,477
NET INCOME (Deficit)	$575,348	$733,888	−$158,540

GREAT NORTHERN.—*Annual Report.*—The annual report of this company for 1933 shows net deficit, after interest and other charges, of $3,187,760, as compared with net deficit of $13,405,439 in 1932. Selected items from the income statement follow:

	1933	1932	Increase or Decrease
Average Mileage Operated	8,445.12	8,408.70	+36.42
RAILWAY OPERATING REVENUES	$61,923,891	$55,549,246	+$6,374,645
Maintenance of way	5,335,607	7,771,028	−2,435,420
Maintenance of equipment	10,961,690	12,428,089	−1,466,399
Transportation—Rail	20,434,098	20,592,335	−158,237
TOTAL OPERATING EXPENSES	41,545,224	45,655,673	−4,110,448
NET REVENUE FROM OPERATIONS	20,378,667	9,893,574	+10,485,093
Railway tax accruals	6,660,944	6,697,424	−36,480
Railway operating income	13,710,511	3,181,940	+10,528,570
Equipment rents—Net Dr.	1,301,953	1,513,915	−211,962
Joint facility rents—Net Dr.	598,331	377,474	+220,857
NET RAILWAY OPERATING INCOME	11,810,227	1,290,551	+10,519,676
Non-operating income	4,887,172	5,096,092	−208,920
GROSS INCOME	16,697,399	6,386,643	+10,310,756
Rent for leased roads	99.	(Cr.) 86.	+186
Interest on funded debt	18,965,541	18,933,207	+32,333
TOTAL DEDUCTIONS FROM GROSS INCOME	19,885,159	19,792,082	+93,077
*NET INCOME (Deficit)	$3,187,760	$13,405,439	−$10,217,679

* Does not include net losses for the year 1933, amounting to $587,486.75 of subsidiaries, in which this company holds directly or indirectly a majority of the outstanding capital stock.

ILLINOIS CENTRAL.—*Notes.*—This company has announced that all holders of

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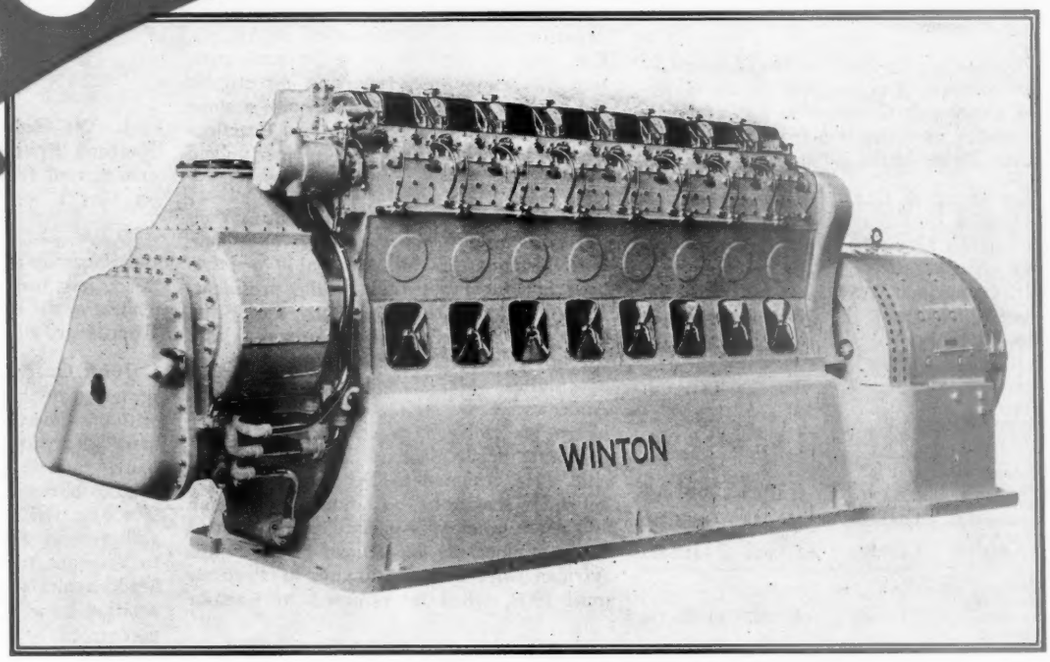
ECONOMY



New Two-Cycle Winton-Diesel Developed Especially For Railroad Service

THE new two-cycle Winton-Diesel Engine now in service in the Burlington "Zephyr" embodies the results of long-continued efforts to make available for American railroads the operating economy characteristic of a properly-designed modern Diesel power plant. This new engine, however, not only provides the low operating cost desired. It answers the high speed of modern competition with the fastest Diesel train ever placed in service. More than that, it affords delightful cleanliness and exceptional safety. Embodying new features developed in collaboration with General Motors Research Laboratories, this power plant is preeminently the engine of the new day in the railroad world.

WINTON ENGINE CORPORATION, Cleveland, Ohio, U. S. A.
SUBSIDIARY OF GENERAL MOTORS CORPORATION

WE DO OUR PART

WINTON-DIESEL POWER

large amounts of its three-year 4½ per cent notes due June 1 have assented to the plan whereby these notes are to be paid off 37½ per cent in cash and 62½ per cent in new three-year 6 per cent notes. Funds for the cash payment are to be borrowed from the Reconstruction Finance Corporation and realization of the plan requires that practically all the note-holders assent to it.

PERE MARQUETTE.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon a portion of its freight line from Kirk, Mich., in a generally northerly direction 8.71 miles.

TUSCARORA VALLEY.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its entire line from Port Royal, Pa., to Blairs Mills, 27 miles.

WHEELING & LAKE ERIE.—*Annual Report.*—The 1933 annual report of this company shows net income, after interest and other charges, of $1,065,050, as compared with net income of $435,084 in 1932. Selected items from the income statement follow:

	1933	1932	Increase or Decrease
RAILWAY OPERATING REVENUES	$10,563,821	$8,536,235	+$2,027,586
Maintenance of way	1,096,572	877,474	+219,098
Maintenance of equipment	3,045,666	2,180,367	+865,299
Transportation—Rail	3,028,851	2,718,526	+310,325
TOTAL OPERATING EXPENSES	7,794,603	6,468,267	+1,326,336
Operating ratio	73.79	75.77	−1.98
NET REVENUE FROM OPERATIONS	2,769,217	2,067,968	+701,249
Railway tax accruals	966,780	929,289	+37,491
Railway operating income	1,801,649	1,138,307	+663,342
Hire of freight cars—Dr.	171,541	268,601	−97,059
Non-operating income	282,874	411,814	−128,940
GROSS INCOME	2,084,522	1,550,120	+534,402
Interest on funded debt	711,527	738,327	−26,800
TOTAL DEDUCTIONS FROM GROSS INCOME	1,019,472	1,115,036	−95,564
NET INCOME	$1,065,050	$435,084	+$629,966

Average Prices of Stocks and of Bonds

	May 22	Last week	Last year
Average price of 20 representative railway stocks..	40.89	40.72	36.60
Average price of 20 representative railway bonds..	78.24	77.87	64.23

Dividends Declared

Boston & Albany.—$2.50, quarterly, payable June 30 to holders of record May 31.

Chesapeake & Ohio.—Common, 70c, quarterly, payable July 1 to holders of record June 8.

Chesapeake Corporation.—63c, quarterly, payable July 2 to holders of record June 8.

Cincinnati, New Orleans & Texas Pacific.—$4.00, semi-annually, payable June 26 to holders of record June 4; Preferred, $1.25, quarterly, payable June 1 to holders of record May 19.

Delaware & Bound Brook.—$2.00, quarterly, payable May 19 to holders of record May 15.

Railway Officers

EXECUTIVE

C. N. Davenport, superintendent of organization in the president's office of the Railway Express Agency, has been appointed assistant to the traffic vice-president, with headquarters in New York. Mr. Davenport has been in the express business for 31 years. **W. K. Weaver,** superintendent of organization of the Southern departments, with headquarters at Atlanta, Ga., has been transferred in the same position to New York, reporting directly to the president. Mr. Weaver will also assume the chairmanship of the Standard Practices Committee, which post was formerly held by Mr. Davenport.

E. P. Mallory, director of the bureau of statistics of the Canadian National, with headquarters at Montreal, Que., has been appointed assistant to the president. Mr. Mallory will continue to direct the bureau of statistics and the capital and operating budget work in addition to his new duties. Mr. Mallory was born at St. Andrews, N. B., on October 31, 1878. He began his railroad career in 1896 in the operating department of the Canadian Pacific. He resigned in December, 1899, to enlist for service in the South African war and after peace was declared he continued in the engineering department of the South African Government Railways at Pretoria until 1908, when he returned to Canada

E. P. Mallory

and entered the service of the Canadian Northern at Toronto, serving in various capacities in the operating and construction departments. In 1918 when the Canadian National was organized, Mr. Mallory was assigned to the president's office at Toronto, where he developed the system of operating control statistics which is still in effect on the system. In 1923 Mr. Mallory was appointed director of the bureau of statistics at Montreal. His jurisdiction was extended to include the headquarters budgetary control system in 1930 and the duties of secretary of the finance committee of the board of directors in 1932. In 1929 and again in 1930, Mr. Mallory's services were loaned to the Mexican Government as advisor to the National Railways Reorganization Committee headed by General Calles, the former President of Mexico.

FINANCIAL, LEGAL AND ACCOUNTING

J. W. Jamison, who retired in 1933 as general counsel for the Southwestern Bell Telephone Company, has been appointed general counsel for the trustees of the St. Louis-San Francisco, with headquarters at St. Louis, succeeding **E. T. Miller,** who has resigned.

OPERATING

J. W. Robinson, trainmaster of the Radford division of the Norfolk & Western, retired from the service of that road on May 1 because of ill health.

O. W. Duff, assistant superintendent on the Canadian National at St. Thomas, Ontario, has been appointed acting superintendent at the same point replacing **Charles Forrester,** deceased.

John O. Bell, superintendent of transportation of the Chicago & Eastern Illinois, with headquarters at Chicago, has retired after 29 years of service with this company, and the position of superintendent of transportation has been abolished. **C. H. Fischer,** chief clerk to the vice-president and general manager, has been promoted to assistant to the general manager, with headquarters as before at Chicago, in which position he will assume the duties formerly performed by the superintendent of transportation.

Mr. Bell was born on July 16, 1865, near Sidney, Ohio, and first entered railway service in 1883, serving as a telegraph operator on various railroads until 1888, when he went with the Illinois Central as a train dispatcher. Two years later he went with the Milwaukee, Lake Shore & Western (now the Chicago & North Western) in the same capacity, and from 1893 to 1898 he was out of railroad service. Mr. Bell returned to railroad work in the latter year as chief clerk to the general superintendent of the Southern Indiana (now part of the Chicago, Milwaukee, St. Paul & Pacific), and was subsequently advanced through the positions of chief train dispatcher and trainmaster. In September, 1905, he went with the Evansville & Terre Haute (now part of the Chicago & Eastern Illinois) as a trainmaster, being promoted to superintendent five years later. In June, 1913, Mr. Bell was made superintendent of the Illinois division of the C. & E. I., being transferred to the Chicago division in 1916. In August, 1927, he was further advanced to superintendent of transportation, with headquarters at Chicago, which position he held until his retirement.

ENGINEERING AND SIGNALING

C. B. Bronson, assistant inspecting engineer of rails, steel wheels and struc-

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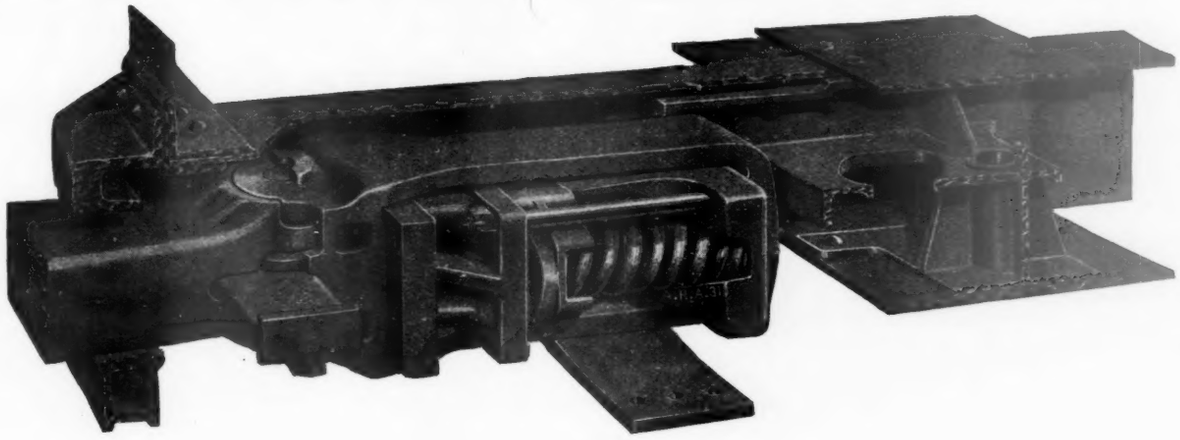


An Ideal, Compact Application

A. R. A. Alternate Standard "E" Coupler with Swivel Shank

A. R. A. Alternate Standard Swiveling Cast Steel Yoke

A. R. A. Certified M-17-A. Draft Gear

NATIONAL MALLEABLE AND STEEL CASTINGS CO.

General Office—Cleveland, O.

Sales Offices: New York, Philadelphia, Chicago, St. Louis, San Francisco

Works: Cleveland, Chicago, Indianapolis, Sharon, Pa., Melrose Park, Ill.

tural steel for the New York Central lines, has been appointed inspecting engineer in charge of rails and structural steel, with headquarters in New York, succeeding **Arthur Knapp** who died on May 3. All matters pertaining to steel wheels and other mechanical matters, formerly handled by Mr. Knapp, have been transferred to the jurisdiction of **F. H. Hardin,** assistant to the president.

ELECTRICAL

R. E. Gallagher, formerly assistant electrical engineer, Louisville & Nashville, was appointed electrical engineer, effective May 1.

SPECIAL

G. E. Payne, who for the past two years has been regional publicity representative for the Central region of the Pennsylvania, with headquarters at Pittsburgh, Pa., has been advanced to head the Pennsylvania system publicity department, with headquarters at Philadelphia, Pa. In his new position, Mr. Payne will supervise and co-ordinate publicity activities for the entire system. Mr. Payne began his career with the Pennsylvania 17 years ago in the office of the superintendent of passenger transportation at Philadelphia. In November, 1923, he was appointed special representative in the publicity department and seven years later he was advanced to the position of assistant to the manager. In January, 1932, Mr. Payne was transferred to Pittsburgh as regional representative, the position he held at the time of his recent promotion.

OBITUARY

W. F. Ackermann, superintendent of shops on the Chicago, Burlington & Quincy, with headquarters at West Burlington, Iowa, died on May 17 following an illness of several months.

G. R. Sinnickson, who retired as a division superintendent on the Pennsylvania in 1918, died on May 20 at the Jane Brown Memorial Hospital, Providence, R. I., after a short illness. Mr. Sinnickson was 59 years old.

Charles Forrester, superintendent on the Canadian National at St. Thomas, Ont., died suddenly on May 18. Mr. Forrester was born on March 5, 1876, at Wanstead, Ont., and entered railway service in 1891 as a telegraph operator on the Grand Trunk (now part of the C.N.R.). Four years later he went with the Toronto, Hamilton & Buffalo as an agent, and in 1897 he returned to the Grand Trunk as an operator, being advanced through the positions of train dispatcher, night chief dispatcher and chief dispatcher. In 1910, he was promoted to trainmaster and in 1913 he was further advanced to superintendent, with headquarters at London, Ont. In 1929, Mr. Forrester was made general superintendent at Saskatoon, Sask., and in 1931, he was made superintendent at St. Thomas, the position he was holding at the time of his death.

John W. Senger, assistant superintendent of equipment of the New York Central, with headquarters in Cleveland, Ohio, died at his home in that city on May 20. Mr. Senger was 64 years of age. He entered the service of the New York Central on September 15, 1883, as messenger at Cleveland, Ohio. He later served as yard foreman, general foreman and supervisor of materials for the same road and as master car builder at various points. In March, 1920, he was appointed superintendent of rolling stock for the Lines West of Buffalo. In November, 1931, Mr. Senger's jurisdiction was extended to include also the Ohio Central lines. He served in this latter position until May 1 of this year at which time the mechanical department of the New York Central was re-organized and Mr.

J. W. Senger

Senger became assistant superintendent of equipment at Cleveland and his former position was abolished.

Charles Lee Kincaid, electrical engineer, Louisville & Nashville, died April 22 at Sts. Mary and Elizabeth Hospital, Louisville, Ky., after undergoing an operation. Mr. Kincaid was born in Elizabethtown, Ky., October 13, 1871. He received his education in the schools of that city, and at the age of 19 accepted employment as a helper in the dynamo room of the old Louisville Lighting Company, serving successively in the capacities of oiler, dynamo tender, switchboard tender, and in outside construction work, erecting transmission lines and transformers throughout the city. After a period of six years, he severed his connection with the lighting company, and took employment with a local construction company as general electrician, later being appointed foreman in its electrical department, and then superintendent in charge of all shops and construction work throughout the state of Kentucky. In October, 1904, he entered the employ of the Louis-

Charles Lee Kincaid

ville & Nashville, and was placed in charge of the installation of the electrical equipment in its shops, then being erected in South Louisville. After completion of the construction work at the shops, he was retained as electrical foreman and served in that capacity until June 16, 1915, when he was appointed electrical engineer. He remained in that capacity up to the time of his death.

Will H. Lyford, vice-president and general counsel of the Chicago & Eastern Illinois, who died on May 16, had been connected with the C. & E. I. for 55 years. He was born on September 15, 1858, at Waterville, Me., and was educated at Colby College at that point. He entered railway service in 1879 as an assistant engineer on the C. & E. I., and from 1880

Will H. Lyford

to 1882 he served as a stenographer for the vice-president and the general manager, being advanced to claim agent in the latter year. During this time Mr. Lyford studied law and in 1884 he was admitted to the bar. In 1886 he was made assistant general solicitor of the C. & E. I. and in the following year he was given the title of attorney in charge of the law department. In 1889 Mr. Lyford was promoted to general solicitor, and three years later he was appointed general counsel. Since 1921 he had held the title of vice-president and general counsel.

"Backward" Railways Becoming Transport Style Leaders

The general trend in railroad transportation seems to be towards speed, lightness, stream-lining, and airconditioning. At this rate, it cannot be long before this same tendency will be evidenced in bus transportation and perhaps in the ordinary passenger automobile as well.

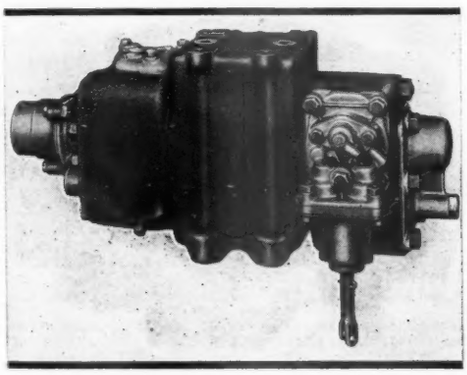
From "Bus Transportation"

Table of Operating Statistics of Railways begins on next left-hand page

The "AB" BRAKE Cuts Railway Operating Costs By—

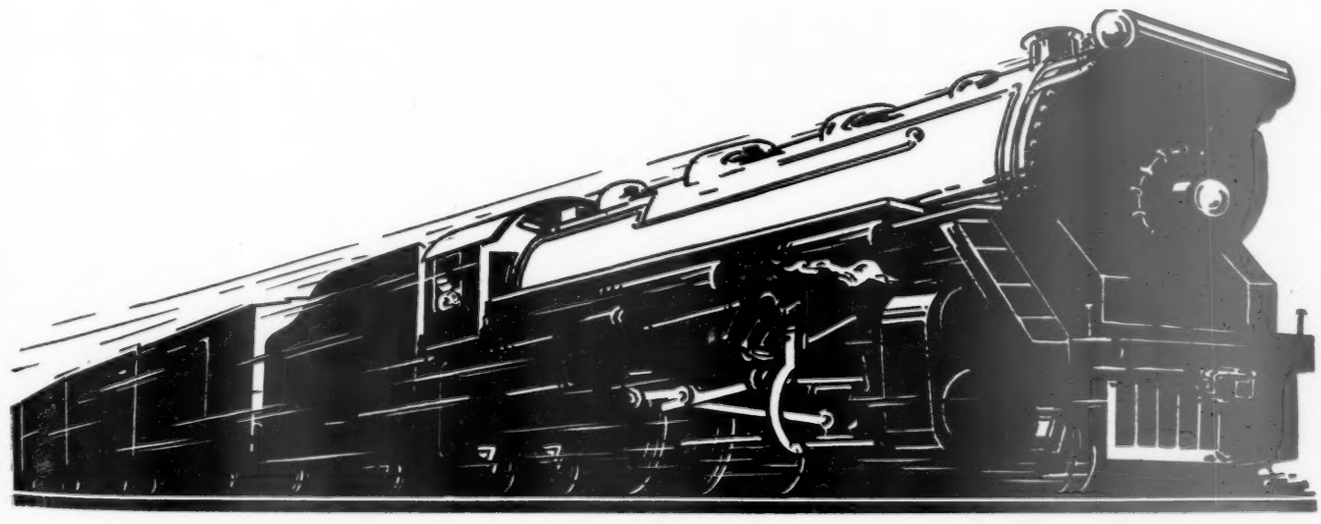
Greater Safety

No. 6 of a Series.



UNIFORM and positive brake action in service and release operations, with powerful reserve emergency action always available (even after a full service application) and very quickly transmitted throughout a train, are features of the "AB" Brake Equipment that provide a new degree of safety in the operation of freight trains and make for greater economy.

WESTINGHOUSE AIR BRAKE CO.
General Office and Works Wilmerding, Pa.
(1264)



Freight Operating Statistics of Large Steam Railways—Selected Items for the Month of March,

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross Excluding locomotives and tenders	Ton-miles (thousands): Net Revenue and non-revenue	Average number of locomotives on line: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany 1934	402	153,605	158,993	10,354	3,612	65.5	191,633	65,415	65	37	36.5	11
1933	402	107,751	111,696	7,344	2,758	67.1	138,659	44,506	61	51	45.4	19
Boston & Maine 1934	2,022	300,026	343,335	33,706	10,115	64.7	579,366	213,647	141	142	50.1	17
1933	2,059	246,279	275,005	21,959	7,384	65.7	412,933	144,882	125	163	56.7	20
N. Y., New H. & Hartf. 1934	2,044	417,377	507,029	31,984	12,540	60.4	736,420	269,212	194	160	45.2	..
1933	2,048	311,033	378,378	15,266	9,300	63.8	507,564	177,641	225	129	36.5	47
Great Lakes Region:												
Delaware & Hudson 1934	848	245,160	338,442	45,144	8,011	58.9	531,833	245,476	237	33	12.1	117
1933	848	186,491	246,721	27,327	5,587	60.0	355,931	157,660	252	30	10.8	163
Del., Lack. & Western 1934	992	394,998	438,251	54,654	12,203	63.6	735,311	291,193	182	75	29.1	30
1933	998	327,248	355,495	42,224	9,647	63.9	567,522	220,100	203	64	24.1	59
Erie (incl. Chi. & Erie) 1934	2,315	772,472	811,317	65,649	30,166	61.1	1,905,178	731,756	312	178	36.4	51
1933	2,316	569,805	592,077	47,469	21,972	61.8	1,357,469	509,521	299	196	39.7	96
Grand Trunk Western 1934	1,008	262,366	265,896	3,296	6,758	60.2	413,200	141,557	67	82	55.0	..
1933	1,003	174,795	176,441	1,197	4,088	60.0	243,520	79,128	82	71	46.5	18
Lehigh Valley 1934	1,335	443,449	468,298	43,522	13,006	61.8	817,381	328,672	175	140	44.5	7
1933	1,341	345,338	359,335	29,600	9,890	63.6	600,021	237,263	167	151	47.5	16
Michigan Central 1934	1,967	469,558	471,841	19,816	15,507	59.6	922,884	299,841	133	49	26.9	14
1933	1,965	334,614	334,843	8,736	9,550	58.7	578,515	177,667	129	79	38.2	39
New York Central 1934	6,418	1,667,170	1,801,013	131,531	59,298	57.8	3,991,561	1,680,812	567	491	46.4	11
1933	6,428	1,230,357	1,310,211	77,485	43,606	59.3	2,715,831	1,061,224	554	610	52.4	67
New York, Chi. & St. L. 1934	1,661	541,003	544,108	6,508	16,083	60.4	986,484	355,794	128	48	27.4	12
1933	1,661	397,457	413,624	4,965	11,983	61.6	695,302	236,365	120	113	48.5	28
Pere Marquette 1934	2,207	406,871	426,201	4,917	9,897	57.7	655,696	247,385	114	39	25.3	6
1933	2,286	292,410	300,885	1,799	6,255	57.0	414,208	153,207	122	51	29.6	23
Pitts. & Lake Erie 1934	234	80,645	82,682	954	3,342	55.3	292,396	159,606	31	38	55.0	2
1933	236	44,967	46,465	1,008	1,744	54.7	146,315	77,188	25	46	64.6	7
Wabash 1934	2,445	600,672	609,857	11,803	18,078	60.8	1,083,393	352,392	170	176	50.8	52
1933	2,453	474,115	479,034	8,739	13,450	63.5	766,394	246,030	180	166	48.1	27
Central Eastern Region:												
Baltimore & Ohio 1934	6,263	1,500,143	1,853,385	219,954	43,667	58.9	3,088,749	1,394,031	715	614	46.2	26
1933	6,283	1,118,171	1,332,767	133,888	30,138	59.5	2,013,956	851,836	782	580	42.6	237
Big Four Lines 1934	2,655	643,578	666,400	29,120	19,004	60.0	1,255,216	560,955	221	157	41.5	8
1933	2,660	507,756	526,749	13,820	13,753	60.4	878,133	371,698	255	176	41.0	31
Central of New Jersey 1934	690	159,115	178,821	36,516	5,198	55.1	382,946	180,577	85	87	50.5	19
1933	692	138,256	148,719	20,872	4,094	55.2	292,939	136,304	117	61	34.5	62
Chicago & Eastern Ill. 1934	939	185,582	186,230	3,130	4,230	59.2	291,600	123,915	57	113	66.2	6
1933	939	162,595	162,747	2,564	3,070	61.2	200,051	83,099	67	97	59.3	26
Elgin, Joliet & Eastern 1934	446	88,790	91,206	1,553	2,076	58.2	194,187	80,689	63	26	28.7	11
1933	446	61,544	61,950	962	1,315	57.7	103,159	48,382	75	15	17.0	31
Long Island 1934	396	42,252	43,243	17,845	404	50.5	31,774	12,576	41	22	35.3	..
1933	396	29,884	30,961	13,270	311	52.4	23,856	9,439	30	16	33.9	4
Pennsylvania System 1934	10,088	2,957,948	3,327,419	369,758	98,398	59.5	6,862,432	3,049,427	1,461	962	39.7	262
1933	10,532	2,253,228	2,501,372	243,548	73,789	61.2	4,871,689	2,080,118	1,699	802	32.1	688
Reading 1934	1,454	481,290	529,181	59,073	13,151	56.2	1,009,324	483,070	251	135	34.9	47
1933	1,454	382,281	409,514	39,202	9,442	56.7	696,396	321,595	296	92	23.7	126
Pocahontas Region:												
Chesapeake & Ohio 1934	3,112	880,695	937,121	42,448	37,628	54.6	3,202,297	1,704,155	459	107	18.9	125
1933	3,136	684,348	719,030	26,829	26,660	54.7	2,249,600	1,196,629	530	162	23.3	250
Norfolk & Western 1934	2,164	645,495	687,465	37,851	25,768	59.2	2,127,459	1,128,430	420	52	11.0	171
1933	2,223	471,552	484,516	20,063	15,949	60.6	1,222,501	627,760	418	61	12.6	214
Southern Region:												
Atlantic Coast Line 1934	5,145	649,112	653,510	8,811	13,571	57.4	763,334	245,719	333	138	29.2	73
1933	5,144	606,030	607,151	8,814	11,974	55.6	668,948	196,743	357	128	26.4	108
Central of Georgia 1934	1,886	234,254	235,330	4,538	5,212	68.3	284,267	106,207	97	44	31.6	..
1933	1,904	189,428	190,193	3,332	3,979	69.8	213,107	79,353	83	57	40.9	..
Illinois Central (incl. 1934	6,618	1,425,713	1,440,272	28,204	32,816	59.7	2,175,965	879,141	612	313	33.9	2
Y. & M. V.) 1933	6,643	1,118,603	1,127,048	19,475	24,508	59.8	1,599,698	632,331	636	312	32.9	39
Louisville & Nashville 1934	5,067	1,041,008	1,123,693	32,505	23,449	59.3	1,637,001	775,769	322	298	48.1	1
1933	5,166	791,224	837,992	18,971	15,826	58.7	1,077,906	484,717	369	333	47.4	73
Seaboard Air Line 1934	4,298	524,822	544,089	3,178	12,944	62.8	759,491	259,134	208	79	27.5	2
1933	4,373	476,935	496,722	4,546	11,067	59.9	663,573	212,683	236	56	19.2	33
Southern 1934	6,599	1,241,580	1,259,696	21,714	28,013	64.6	1,593,047	610,664	619	289	31.8	120
1933	6,602	993,032	1,003,415	16,811	22,094	66.6	1,188,498	436,862	723	189	20.7	235
Northwestern Region:												
Chi. & North Western 1934	8,443	980,835	1,030,717	22,194	24,413	62.8	1,472,026	536,187	574	241	29.6	145
1933	8,443	822,903	862,656	19,108	18,815	63.2	1,110,983	367,061	596	231	27.9	228
Chicago Great Western 1934	1,463	229,333	229,602	14,449	6,884	59.9	422,728	144,898	65	35	35.3	1
1933	1,463	188,664	189,657	10,970	5,186	57.3	325,376	107,161	58	43	42.6	2
Chi., Milw., St. P. & Pac. 1934	11,157	1,168,570	1,236,505	56,733	30,328	60.6	1,917,461	754,363	546	327	37.4	182
1933	11,234	1,008,852	1,058,340	44,884	23,476	60.7	1,481,168	577,326	736	170	18.8	382
Chi., St. P., Minneap. & 1934	1,653	207,935	214,939	9,603	4,609	66.1	268,648	104,972	126	28	18.1	62
Om. 1933	1,714	185,097	189,997	7,819	3,338	68.5	188,704	70,950	137	35	20.3	78
Great Northern 1934	8,335	597,945	603,207	18,606	17,834	68.6	1,061,989	444,067	432	172	28.5	117
1933	8,426	536,282	539,604	13,287	14,282	65.2	874,862	347,115	471	136	22.4	164
Minneap., St. P. & S. St. 1934	4,281	336,157	341,752	3,143	7,202	66.5	407,443	163,319	118	47	28.6	8
M. 1933	4,314	324,376	329,259	1,834	6,011	65.2	345,789	138,399	123	48	28.1	11
Northern Pacific 1934	6,414	503,976	549,153	37,458	15,773	71.3	888,189	378,553	349	163	31.8	60
1933	6,400	435,094	458,974	27,302	11,791	69.9	670,682	277,043	384	135	26.1	106
Oreg.-Wash. R. R. & Nav. 1934	2,112	143,360	148,634	8,681	3,860	67.2	222,223	87,214	77	45	36.9	18
1933	2,137	117,892	121,869	7,063	2,811	70.3	153,665	58,290	81	39	32.5	32
Central Western Region:												
Alton 1934	923	198,581	202,220	1,171	3,840	61.1	239,417	78,096	43	52	55.1	..
1933	952	173,688	174,177	1,008	3,291	57.8	214,380	73,117	53	50	48.5	10
Atch., Top. & S. Fe (incl. 1934	11,425	1,343,701	1,413,392	55,119	37,708	64.8	2,201,681	718,640	600	321	34.9	193
P. & S. F.) 1933	11,606	1,175,708	1,242,363	43,706	29,249	64.8	1,721,021	586,834	652	276	29.8	274
Chi., Burl. & Quincy 1934	9,096	1,147,789	1,203,195	39,223	30,585	61.9	1,822,348	762,328	448	122	21.4	1
1933	9,157	974,014	1,003,281	23,992	22,651	59.8	1,348,439	534,423	432	153	26.2	69
Chi., Rock I. & Pac. (incl. 1934	8,334	1,043,357	1,064,313	7,090	23,122	59.3	1,431,195	496,078	455	149	24.7	114
Chi., Rock I. & Gulf) 1933	8,333	924,460	939,036	4,121	18,767	58.8	1,158,198	397,824	456	154	25.2	119
Denver & R. G. Wn. 1934	2,469	198,658	218,626	23,369	5,992	66.2	354,847	139,234	178	50	21.9	42
1933	2,514	151,635	164,204	16,720	4,139	66.5	241,366	95,223	191	47	19.7	74
Los Angeles & Salt Lake. 1934	1,232	156,672	176,580	21,719	4,580	66.6	271,459	102,711	70	26	27.6	8
1933	1,240	130,201	143,618	15,849	3,922	71.5	209,656	76,397	71	36	33.6	13
Oregon Short Line 1934	2,461	234,926	245,290	17,111	6,383	65.7	373,341	136,663	122	57	32.1	31
1933	2,452	208,427	216,896	14,067	5,001	62.7	304,122	110,015	135	51	27.4	59
Southern Pacific—Pacific 1934	8,683	995,820	1,066,412	113,091	31,566	61.1	1,964,311	625,922	519	349	40.2	177
Lines 1933	8,878	804,682	851,752	76,584	23,539	63.3	1,414,438	446,027	513	379	42.4	223
Union Pacific 1934	3,768	830,599	852,178	35,097	29,382	63.0	1,740,416	595,864	309	128	29.3	93
1933	3,767	643,562	657,804	25,199	20,432	65.2	1,170,501	401,014	359	115	24.3	196
Southwestern Region:												
Gulf, Colo. & S. Fe 1934	1,906	174,082	175,661	2,195	4,140	63.7	248,575	96,849	87	41	32.3	22
1933	1,943	175,048	177,171	2,503	3,948	65.0	237,972	97,357	85	35	28.8	25
Mo.-Kans.-Texas Lines 1934	3,282	369,312	372,158	5,569	9,411	58.7	571,020	189,075	154	76	33.1	67
1933	3,282	334,081	335,473	4,458	7,306	61.5	423,896	143,141	153	77	33.6	77
Missouri Pacific 1934	7,333	1,151,700	1,191,700	26,964	31,969	61.5	1,995,657	716,900	398	158	28.4	104
1933	7,385	916,688	938,154	19,497	22,907	62.3	1,400,666	514,935	416	174	29.5	167
St. Louis-San Francisco. 1934	5,152	636,074	641,511	7,196	13,999	60.3	863,103	328,475	390	83	17.5	149
1933	5,193	568,508	572,646	6,526	11,794	62.1	714,888	281,863	391	81	17.2	157
St. Louis Southwestern 1934	1,872	242,075	245,978	3,242	6,137	59.4	382,300	116,890	93	42	30.9	7
Lines 1933	1,902	186,329	195,599	2,632	4,440	60.3	262,557	82,937	104	29	21.8	30
Texas & New Orleans 1934	4,464	497,603	498,048	6,679	11,273	63.7	669,863	232,977	221	82	27.1	49
1933	4,516	432,560	432,877	3,577	9,151	62.8	540,163	178,159	216	91	29.7	52
Texas & Pacific 1934	1,946	253,046	253,046	1,496	7,564	60.3	466,921	153,246	165	72	30.2	96
1933	1,946	228,911	228,911	1,834	6,464	59.7	403,932	136,291	185	62	25.1	99

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

1934, Compared with March, 1933, for Roads with Annual Operating Revenues Above $25,000,000

Region, road and year		Average number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross ton-miles per train-mile, excluding locomotives and tenders	Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive-miles per locomotive-day
New England Region:														
Boston & Albany	1934	3,099	3,684	6,783	24.4	21,054	1,248	426	18.1	311	26.2	5,253	164	53.3
	1933	4,656	2,990	7,646	36.9	20,817	1,287	413	16.1	188	17.3	3,574	176	34.3
Boston & Maine	1934	9,224	7,944	17,168	14.5	26,016	1,931	712	21.1	401	29.4	3,409	113	42.9
	1933	9,767	6,312	16,079	14.5	23,932	1,688	592	19.6	293	22.8	2,286	114	33.3
N. Y., New H. & Hartf.	1934	14,323	13,401	27,724	11.9	25,047	1,764	645	21.5	313	24.2	4,248	122	49.2
	1933	17,121	8,698	25,819	8.8	25,267	1,632	571	19.1	222	18.2	2,798	118	35.8
Great Lakes Region:														
Delaware & Hudson	1934	10,001	3,319	13,320	4.2	27,631	2,169	1,001	30.6	594	32.9	9,335	123	45.8
	1933	12,340	2,043	14,383	3.8	24,995	1,909	845	28.2	354	20.9	5,997	126	31.3
Del., Lack. & Western	1934	15,479	5,826	21,305	11.5	26,939	1,862	737	23.9	441	29.0	9,471	165	61.9
	1933	19,254	3,167	22,421	11.2	25,388	1,734	673	22.8	317	21.7	7,113	153	48.1
Erie (incl. Chi. & Erie)	1934	30,893	14,344	45,237	5.3	38,823	2,466	947	24.3	522	35.2	10,195	112	57.7
	1933	36,053	9,916	45,969	5.1	37,635	2,382	894	23.2	358	24.9	7,097	108	41.7
Grand Trunk Western	1934	4,611	10,157	14,768	19.8	29,127	1,575	540	20.9	309	24.5	4,529	111	58.1
	1933	5,761	7,106	12,867	19.5	25,685	1,393	453	19.4	198	17.1	2,545	114	37.5
Lehigh Valley	1934	17,702	7,321	25,023	19.7	31,496	1,843	741	25.3	424	27.1	7,943	152	52.4
	1933	19,966	4,073	24,039	19.3	29,905	1,737	687	24.0	318	20.9	5,708	150	39.5
Michigan Central	1934	20,376	23,099	43,475	13.8	35,264	1,965	639	19.3	222	19.3	4,917	115	87.1
	1933	26,331	17,445	43,776	10.1	32,060	1,729	531	18.6	131	12.0	2,917	128	53.3
New York Central	1934	58,969	61,432	120,401	21.5	36,133	2,394	1,008	28.3	450	27.5	8,449	108	58.9
	1933	82,324	53,179	135,503	26.6	34,254	2,207	863	24.3	253	17.5	5,326	108	38.4
New York, Chi. & St. L.	1934	8,316	7,940	16,256	4.1	31,616	1,823	658	22.1	706	52.9	6,911	109	100.5
	1933	15,127	5,348	20,475	12.6	31,065	1,749	595	19.7	372	30.6	4,592	110	57.9
Pere Marquette	1934	11,311	6,509	17,820	2.5	26,482	1,612	608	25.0	448	31.0	3,616	106	91.2
	1933	13,707	4,121	17,828	2.4	24,976	1,417	524	24.5	277	19.9	2,162	101	56.5
Pitts. & Lake Erie	1934	16,650	9,753	26,403	31.8	48,218	3,626	1,979	47.8	195	7.4	22,033	106	38.9
	1933	17,798	6,456	24,254	30.6	47,092	3,254	1,717	44.3	103	4.2	10,571	124	21.8
Wabash	1934	13,556	9,425	22,981	4.8	36,388	1,804	587	19.5	495	41.7	4,650	123	58.0
	1933	18,911	7,628	26,539	5.0	33,423	1,616	519	18.3	299	25.8	3,235	121	45.5
Central Eastern Region:														
Baltimore & Ohio	1934	78,557	21,737	100,294	18.2	25,340	2,059	929	31.9	448	23.8	7,180	166	50.3
	1933	98,002	14,972	112,974	14.2	24,141	1,801	962	28.3	243	14.5	4,374	163	34.7
Big Four Lines	1934	17,884	23,386	41,270	16.9	32,634	1,950	872	29.5	438	24.8	6,816	123	59.4
	1933	20,420	18,108	38,528	20.3	30,978	1,729	732	27.0	311	19.1	4,507	128	40.5
Central of New Jersey	1934	16,367	8,867	25,234	32.1	27,624	2,407	1,135	34.7	231	12.1	8,443	156	40.4
	1933	17,997	5,463	23,460	25.3	27,547	2,119	986	33.3	187	10.2	6,354	136	30.7
Chicago & Eastern Ill.	1934	5,578	2,637	8,215	25.1	26,728	1,571	668	29.3	487	28.0	4,257	134	36.0
	1933	6,136	1,788	7,924	17.9	22,171	1,230	511	27.1	338	20.4	2,855	147	32.5
Elgin, Joliet & Eastern	1934	9,182	3,968	13,150	23.5	19,025	2,187	909	38.9	198	8.7	5,836	118	33.6
	1933	9,924	3,766	13,690	21.9	14,775	1,676	786	36.8	114	5.4	3,499	133	22.5
Long Island	1934	766	4,188	4,954	1.2	5,845	752	298	31.1	82	5.2	1,024	319	31.1
	1933	784	3,159	3,943	1.8	5,898	798	316	30.4	77	4.9	769	298	31.0
Pennsylvania System	1934	242,242	49,733	291,975	12.4	32,001	2,320	1,031	31.0	337	18.3	9,751	133	49.2
	1933	252,749	38,303	291,052	9.3	30,644	2,162	923	28.2	231	13.4	6,371	135	35.4
Reading	1934	33,031	9,196	42,227	18.2	24,250	2,097	1,004	36.7	369	17.9	10,720	154	49.1
	1933	40,164	6,366	46,530	17.6	22,789	1,822	841	34.1	223	11.6	7,135	156	37.4
Pocahontas Region:														
Chesapeake & Ohio	1934	40,838	9,096	49,934	1.9	48,853	3,636	1,935	45.3	1,101	44.5	17,666	84	55.8
	1933	47,023	6,466	53,489	1.3	45,794	3,287	1,749	44.9	722	29.4	12,310	86	34.8
Norfolk & Western	1934	35,559	4,262	39,821	3.6	48,335	3,296	1,748	43.8	914	35.3	16,821	112	49.5
	1933	42,146	3,708	45,854	3.0	38,699	2,593	1,331	39.4	442	18.5	9,108	128	34.0
Southern Region:														
Atlantic Coast Line	1934	26,658	7,004	33,662	25.7	20,264	1,176	379	18.1	235	22.7	1,541	122	45.4
	1933	28,725	5,948	34,673	15.2	20,517	1,104	325	16.4	183	20.1	1,234	118	41.0
Central of Georgia	1934	6,925	3,188	10,113	23.4	21,386	1,213	453	20.4	339	24.4	1,817	136	54.9
	1933	7,457	1,505	8,962	23.9	20,057	1,125	419	19.9	286	20.5	1,345	132	44.6
Illinois Central (incl. Y. & M. V.)	1934	52,518	14,260	66,778	39.4	25,528	1,526	617	26.8	425	26.6	4,285	147	51.2
	1933	55,017	11,218	66,235	25.9	24,239	1,430	565	25.8	308	20.0	3,071	151	39.0
Louisville & Nashville	1934	46,940	7,383	54,323	30.5	23,686	1,573	745	33.1	461	23.5	4,939	144	60.2
	1933	54,845	5,386	60,231	23.9	20,399	1,362	613	30.6	260	14.4	3,027	157	39.4
Seaboard Air Line	1934	11,965	6,478	18,443	5.6	22,734	1,447	494	20.0	453	36.0	1,945	126	61.5
	1933	13,546	4,922	18,468	5.4	22,781	1,391	446	19.2	371	32.3	1,569	126	55.4
Southern	1934	31,278	16,220	47,498	17.8	20,682	1,283	492	21.8	415	29.5	2,985	160	45.5
	1933	32,047	16,238	48,285	17.0	19,676	1,197	440	19.8	292	22.2	2,135	158	36.1
Northwestern Region:														
Chi. & North Western	1934	42,559	17,551	60,110	10.9	23,290	1,501	547	22.0	288	20.9	2,049	139	41.6
	1933	46,920	16,225	63,145	9.5	21,059	1,350	446	19.5	188	15.2	1,402	140	34.4
Chicago Great Western	1934	2,547	2,817	5,364	3.7	33,153	1,843	632	21.1	871	69.1	3,195	147	78.8
	1933	4,589	2,487	7,076	12.9	30,237	1,725	568	20.7	489	41.3	2,362	145	63.7
Chi., Milw., St. P. & Pac.	1934	55,545	14,173	69,718	5.2	25,305	1,641	646	24.9	349	23.1	2,181	131	47.8
	1933	61,981	12,312	74,293	3.6	22,913	1,468	572	24.6	251	16.8	1,658	133	39.3
Chi., St. P., Minneap. & Om.	1934	2,123	6,590	8,713	12.3	19,129	1,292	505	22.8	389	25.8	2,049	123	46.9
	1933	2,314	6,054	8,368	10.9	15,336	1,019	383	21.3	274	18.8	1,335	149	37.1
Great Northern	1934	42,531	8,710	51,241	7.3	26,231	1,776	743	24.9	280	16.4	1,719	135	33.2
	1933	44,789	7,470	52,259	5.8	24,626	1,631	647	24.3	214	13.5	1,329	138	29.4
Minneap., St. P. & S. St. M.	1934	16,213	3,129	19,342	5.6	18,883	1,212	486	22.7	273	18.1	1,231	120	67.4
	1933	19,951	2,250	22,201	3.8	16,829	1,066	427	23.0	202	13.5	1,035	121	62.5
Northern Pacific	1934	40,739	3,856	44,595	13.0	26,449	1,762	751	24.0	274	16.0	1,904	154	37.0
	1933	43,750	3,404	47,154	10.9	23,830	1,541	637	23.5	190	11.5	1,396	155	30.2
Oreg.-Wash. R. R. & Nav.	1934	8,735	1,819	10,554	4.6	24,585	1,550	608	22.6	267	17.6	1,332	137	41.8
	1933	8,232	1,417	9,649	9.0	21,216	1,303	494	20.7	195	13.4	880	148	34.7
Central Western Region:														
Alton	1934	3,063	5,640	8,703	24.0	25,939	1,206	393	20.3	289	23.3	2,731	145	69.1
	1933	3,939	5,337	9,276	15.6	25,482	1,234	421	22.2	254	19.8	2,479	138	54.9
Atch., Top. & S. Fe (incl. P. & S. F.)	1934	63,940	8,262	72,202	12.3	30,996	1,639	535	19.1	321	26.0	2,029	116	51.4
	1933	68,830	7,216	76,046	10.6	27,489	1,464	499	20.1	249	19.1	1,631	119	44.7
Chi., Burl. & Quincy	1934	37,145	12,378	49,523	10.4	27,652	1,588	664	24.9	497	32.2	2,704	128	70.4
	1933	44,539	10,689	55,228	10.0	24,295	1,384	549	23.6	312	22.1	1,883	131	56.7
Chi., Rock I. & Pac. (incl. Chi., Rock I. & Gulf)	1934	33,835	10,271	44,106	23.6	23,718	1,372	475	21.5	363	28.5	1,920	150	57.2
	1933	41,814	9,740	51,554	17.3	21,606	1,253	430	21.2	249	20.0	1,540	149	49.9
Denver & R. G. Wn.	1934	13,984	2,368	16,352	4.9	27,296	1,786	701	23.2	275	17.9	1,819	163	34.2
	1933	14,437	2,125	16,562	4.5	24,263	1,592	628	23.0	185	12.1	1,222	175	24.5
Los Angeles & Salt Lake	1934	4,929	940	5,869	10.2	29,840	1,733	656	22.4	565	37.8	2,690	138	66.6
	1933	4,864	1,014	5,878	7.0	28,922	1,610	587	19.5	419	30.1	1,987	149	48.3
Oregon Short Line	1934	9,105	4,272	13,377	15.8	27,192	1,589	582	21.4	330	23.4	1,791	117	47.3
	1933	10,248	3,443	13,691	17.1	24,453	1,459	528	22.0	259	18.8	1,447	125	40.1
Southern Pacific—Pacific Lines	1934	37,020	21,044	58,064	9.3	31,374	1,973	629	19.8	348	28.7	2,325	105	43.8
	1933	41,568	20,470	62,038	12.3	28,874	1,758	554	18.9	232	19.3	1,621	116	33.6
Union Pacific	1934	23,231	7,865	31,096	21.4	48,450	2,095	717	20.3	618	48.4	5,101	117	65.5
	1933	26,365	6,261	32,626	20.6	39,983	1,819	623	19.6	396	31.0	3,434	121	46.5
Southwestern Region:														
Gulf, Colo. & S. Fe	1934	14,417	1,680	16,097	6.6	23,915	1,428	556	23.4	194	13.0	1,639	121	44.8
	1933	13,827	1,698	15,525	4.9	23,115	1,359	556	24.7	202	12.6	1,616	116	48.3
Mo.-Kans.-Texas Lines	1934	8,995	2,866	11,861	3.9	27,736	1,546	512	20.1	514	43.6	1,859	99	52.9
	1933	10,682	2,340	13,022	5.6	22,995	1,269	428	19.6	355	29.5	1,407	106	47.6
Missouri Pacific	1934	20,842	18,150	38,992	5.6	31,253	1,733	622	22.4	593	43.0	3,154	130	70.7
	1933	28,105	13,167	41,272	14.4	27,242	1,528	562	22.5	402	28.8	2,249	138	52.4
St. Louis-San Francisco	1934	22,065	4,745	26,810	6.6	23,680	1,357	516	23.5	395	27.9	2,057	144	44.2
	1933	26,294	4,117	30,411	4.6	21,557	1,257	496	23.9	299	20.2	1,751	143	39.6
St. Louis Southwestern Lines	1934	4,639	2,942	7,581	9.1	28,137	1,579	483	19.0	497	43.9	2,014	101	59.5
	1933	4,731	2,304	7,035	10.7	25,319	1,409	445	18.7	380	33.8	1,406	115	48.2
Texas & New Orleans	1934	7,871	10,294	18,165	5.8	23,353	1,346	468	20.7	414	31.4	1,684	96	53.7
	1933	9,343	10,900	20,243	6.8	21,255	1,249	412	19.5	284	23.2	1,273	97	45.9
Texas & Pacific	1934	3,573	4,606	8,179	7.1	27,973	1,845	606	20.3	604	49.5	2,541	90	34.7
	1933	5,975	4,179	10,154	11.5	28,074	1,765	595	21.1	433	34.4	2,260	86	30.1

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A carload of B-K Stokers ready for shipment to the Peiping Suiyuan Railway, Tientsin, China

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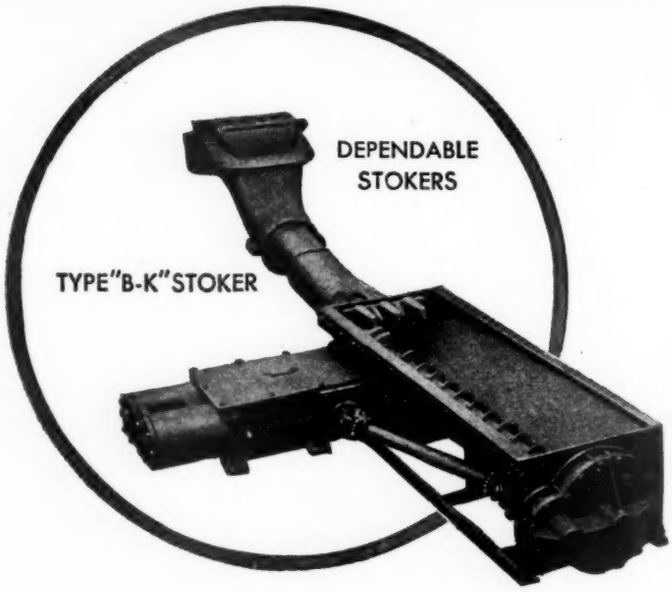

Standard Stokers are used in every country in the world where coal burning locomotives are in service, for the same reasons that they have been adopted as standard in the United States and Canada.

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